

*Lindenmuth
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FIRE FINANCING

ADMINISTRATION & RESEARCH

TOPIC VII

**PRESENTED AT FIRE CONTROL CONFERENCE
OGDEN, UTAH.**

FEBRUARY 15 TO 20, 1954.



C. J. OLSEN, REGIONAL FORESTER, REGION FOUR.
Task Force Leader for Administration Section, Topic VII.

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C. J. Olsen, Regional Forester, R-4, Task Force Leader - Administration
 R. W. Cowlin, Director, Pacific Northwest Station - Research

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 Presented by R. W. Cowlin (PNW) - Research

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Presented by C. J. Olsen, Region Four

THE DEPRECIATED DOLLAR AND ITS IMPACT ON THE STRENGTH
OF THE FIRE ORGANIZATION

ADMINISTRATION SECTION
by

M. H. Davis
Assistant Regional Forester, R-3

Presented by
C. K. Collins, Fire Control, R-3

Topic VII - Subtopic A

TOPIC VII

Sub-Topic "A": The depreciated dollar and its impact on the strength of the fire organization and on fire research.

M. H. Davis, Assistant Regional Forester, R-3

If you like playing with figures, I recommend a review of statistical data on labor and commodity costs and - "How much is a dollar!" Or, expressed another way - "How much rubber can a dollar hold?"

It would not be difficult to write a thesis on the "depreciated" dollar and its impact on -- fire and -- research. I'll spare you the necessity of further satire and get down to cases.

What has happened? You will be surprised I am sure, as I have been in preparing for this topic.

We wrote the Departments of Labor and Commerce for statistical data and received an armload in reply which, frankly, I have not had the time - nor inclination - to digest "en toto". I have, however, sincerely studied enough of the material to determine the following:

1. Taking the period 1947 - 1949 as the base period, i.e., a dollar at 100¢ value, the same dollar would have a relative value in purchasing power as follows:

	<u>Wholesale Prices</u>	<u>Consumer Prices</u>	<u>Retail Food Prices</u>
August, 1953	90.4¢	87.0¢	87.6¢
1950	97.0	97.3	98.8
1947	103.7	104.7	104.3
1940	195.7	166.9	209.2
1930	178.3	140.1	160.3
1920	(Not Available)	116.7	119.6
1913 (earliest)	--	236.4	252.5

The foregoing illustrates that wholesale prices doubled from 1940 to 1950 or that the purchase value of the wholesale dollar depreciated 50% from 1940 to 1950, whichever way you choose to state it! Chart "C" attached to this paper presents graphically the trend from 1913 to August of 1953 of wholesale prices, retail food prices and consumer prices. To sum it up, let's say that the 1947-1949 dollar would buy at retail food stores \$2.52 of food in 1913, but only 87.6¢ in August 1953. This same dollar depreciated in purchase value from 1940 to 1950 (in ten years) from \$2.09 to 98.8¢!

Now, what about the effect on fire protection? Let's start with airplane hire! (Data from R-1).

(Hourly rates)

	<u>4 Place Observa- tion Plane</u>	<u>Ford Tri- Motor or equal</u>	<u>DC-3 Transport</u>	<u>Heli- copter</u>
1945	\$ 20.00	\$ 90.00	\$195.00	-
1950	16.00	90.00	195.00	75.00
1953	19.82	110.00*	232.00	84.50

* Includes annual stand-by payment prorated. You can draw your own conclusions on this.

Emergency Rations (Data from R-1)

	<u>"K"</u>	<u>"C"</u>	<u>30 Man 1-day</u>	<u>Spike- Travel</u>
1945	87.9¢	-	\$40.02	\$20.02
1950	-	\$2.10	99.96	29.13
1953	-	2.29	86.51	33.83

The trend is noticeable, but changes in ration make-up and specifications have some bearing.

Let's look at some typical hand tool price trends!

Cost of Tools:

	<u>R - 1</u>		<u>R - 4</u>	
	<u>1945</u>	<u>1953</u>	<u>1945</u>	<u>1953</u>
Shovels, l.h.r.p.	.89	1.65	1.84	2.49
" , s.h. baby	.76	1.43	1.44	1.75
Axes, db.	1.80	2.93	1.34	2.98
McLeod Tools	Not used in R1		Not used in R-4	
Pulaskies	2.04	3.55	2.54	3.51
Canteens, 1 Ga.	2.14	2.83	-	2.72
Kapok beds	13.35	22.12	14.00	25.32
Blankets, O.d. st.	3.04	3.80	-	-
Fire hose, 1½" r.l.c.j.	.3574	.2955	.325	.53
5-Gal. Back Pack Pumps	4.14	6.76	11.00	13.00
Pacific Marine or Edwards Portable Pumps	366.53	407.19	450.00	532.00
Electric Headlamps	1.96	2.87	2.46	2.87

It is apparent from this tabulation that the price trend for hand tools corresponds to the purchase value of the dollar trend in Chart "C" attached to this paper, i.e., 1947-49 dollar at 100 cents - 87.0 cents in August 1953.

A look at E.O.R.&R. rates and private equipment rental rates is revealing:

Equipment Rates (E.O.&R.)							
Region	1 1/2 Ton S. S.		D-8 Tractor		1/2 T. Pickup		
	1945	1953	1945	1953	1945	1953	
R-1	.10	.163	5.35	6.70	.06	.11	
R-2	.095	.20	5.50	8.00	.045	.10	
R-3	.22	.18	4.00	7.10	.055	.08	
R-4	.16	.19	8.00	10.50	.0825	.105	
R-7	.055	.1135	-	-	.035	.075	

Rental Rates of Equipment from Private Owners							
R-1	.15	.25	12.00	14.00	.07	.07 - \$30 Wk.	
R-2	.20	.25	10.00	12.00	.15	.20	
R-3	-	.25	-	.15 - \$20	-	.15	
R-4	.15	.20	\$10 - \$12	14 - 18	.15	.16	
R-7	-	.20	-	12.00	-	.15	

These rates speak for themselves and reflect the same trend as for other costs.

Classified Position Salary Comparison (R-3)

<u>Position</u>	<u>1945</u>	<u>1953</u>
Lookout (GS-3)	1902 - 2298	2950 - 3430
Smokechaser (GS-4)	2100 - 2496	3175 - 3655
Fire Control Aid (GS-5)	2320 - 2980	3410 - 4160

These rates increased 67, 68, and 71% respectively in maximums in eight years.

Since this paper was prepared, the following five items have been received from the Chief which are felt significant and

therefore are inserted for presentation at this point:

1. Calculation of increased cost of operation resulting from re-classification of short term positions an average of one step in grade from 1941 to 1953, pay increases granted by the Congress and the Overtime Act of 1945.

- a. Increased cost of operations compared with 1941 if no increases in grade had been granted.

1941	SP-2	\$1320
"	SP-3	1440
"	SP-4	1620
		<hr/>
Total		\$4380 or avg. of \$1460 per annum.
1953	GS-1	\$2500
"	GS-2	2750
"	GS-3	2950
		<hr/>
Total		\$8200 or avg. of \$2733 per annum.

\$2733 - \$1460 - \$1273 increase per annum or 87.2 %.

- b. Increased cost of operations compared to 1941 due to an average increase in grade.

1953	GS-2	\$2750
"	GS-3	2950
"	GS-4	3175
		<hr/>
Total		\$8875 or avg. of \$2958 per annum.

\$2958 - \$1460 - \$1498 per annum increase from 1941 to 1953 due to increase of one step in grade resulting from reclassification and Pay Act increases or 102.6 %.

- c. Increased cost of operation resulting from reclassification of short term protection positions on average of one step in grade.
- $\$2958 - \$2733 = \$225$ per annum or 8.2 %.
- d. Increased cost of operation in 1953 compared to 1941 resulting from Overtime Act of 1945.

The 40 hour week provision resulted in two days per week for which special provision had to be made if detection and initial attack standards were to be rigidly maintained. If initial action were to be rigidly maintained cost of employment for these classes of personnel would increase 60% -- 40 hours plus $\frac{1}{2}$ times 16 hours or 64 hours of pay compared to 7 days on duty in 1941 at the base pay rate.

By careful management and by taking a considerable calculated risk it is estimated that 6 days employment per week for detectors and initial attack will prove acceptable. $40 + 8 \times 1\frac{1}{2} = 52$ hours or a 30% increase over base pay rates.

$2958 + 30\% \text{ of } 2958 = \3845 or 163% over 1941 resulting from (1) reclassifying the average short term protection position upward one grade; (2) Pay Act increases by the Congress and (3) Overtime Act of 1945.

2. Calculation of increased cost of operation resulting from Pay increases granted by the Congress since 1941 and reclassification upward of grade for year long positions at the Forest and District levels.

(No overtime involved these personnel)

<u>1941 Base Rates</u>		<u>1953 Base Rates</u>	
SP - 4	\$1620	GS-4	\$3175
SP - 5	1800	GS-5	3410
" - 6	2000	GS-6	3795
P - 2	<u>3000</u>	GS-7	<u>5140</u>
	\$8420		\$15520
Average	\$2105		\$3880

Percent increase from 1941 to 1953 = 84.3%

3. Calculation of increased cost of operation at regional level dis- regarding reclassification increases but inclusive of increases in base pay granted by Congress. Highest paid positions are used to determine percentage increase since this would result in the most conservative figure.

<u>1941 Base Pay</u>		<u>1953 Base Pay</u>
P - 4	\$3800	\$5940
P - 5	4600	7040
P - 6	<u>5600</u>	<u>8360</u>
Totals	14,000	\$21,340

Average annual \$4667 \$ 7113

Increase = 52.5% from 1941 to 1953.

4. Calculation of increased cost of operation due to increased rentals, Cost of equipment purchases, equipment replacement costs, travel, etc.

Weighted average for the above items.

<u>1941</u>	<u>1953</u>
\$100	\$191.50 or 91.5% increase

5. The above calculations may be summarized as follows:

<u>Item</u>	<u>Index</u>	
	<u>1941</u>	<u>1953</u>
Regional Office Personnel	100	152.5
Yearlong Forest Personnel	100	184.3
Short Term Personnel required to work 6 days per week	100	264.0
Short Term Personnel scheduled for 5 day per week employment	100	202.6
Travel	100	191.5
Equipment and other costs	100	191.5

It is estimated that 60% of the short term force are required to work 6 days per week with 40% scheduled for a 5 day week.

Effect of the dollar value on fire protection:

F.Y.	:\$ Value :	*P&M Allotments	: xx Converted :	
	:	:Function Preparedness:	Value	:
1947	:104.7% :	\$5,903,390	: \$6,181,149 :	
1950	: 97.3% :	7,172,000	: 6,507,155 :	
1953	: 87.0% :	6,900,000	: 6,003,000 :	Reduction of 2.8%
	:	:	:	in effective pur-
	:	:	:	chasing power for
	:	:	:	"Preparedness"
	:	:	:	activities for 1947

* Taken from Chief's allotment letters - totals to Regions.

xx 1947 Base period.

Based upon expenditures for "preparedness" and "suppression" - taken from Fiscal Control F.Y. expenditure records the following adjusted (dollar value) is revealing: (Note: Expenditure figures are F.Y. while occurrence - number of fires - are C.Y.):

Year:	Factor:	Area Burned:	P&M "Preparedness" (Adjusted)	FF "Preparedness" (Adjusted)	FF "Suppression" (Adjusted)	No. of Fires
1946:	123%	321,713	\$7,840,466	\$183,775	\$4,026,455	11,886
1950:	97.3%	371,743	7,306,756	673,154	6,278,641	10,103
1952:	85.0%	213,590	6,771,637	513,469	6,771,466	11,965

Adjusted (to 1947 Base) Cost per fire:

	<u>Preparedness</u>	<u>Suppression</u>	<u>Total</u>
1946	\$675.10	\$ 338.85	\$1013.95
1950	789.85	621.46	1411.31
1952	608.87	569.39	1178.26

It is apparent from the foregoing that with reduction of funds for "Preparedness", more funds per fire are involved in suppression and total per capita fire costs - recognizing variation due to severity of fire weather. Developments in mechanization and use of aircraft and smokejumpers are factors, of course.

The following tabulation of wage rates in the fire positions reflects the wage trend for the eight year period 1945 - 1953.

Position

	: R-1	: R-2	: R-3	: R-4	: R-5	: R-6	
	: 1945:1953	: 1945:1953	: 1945:1953	: 1945:1953	: 1945:1953	: 1945:1953*	
Firefighter	: .60:1.30:	: .90:1.05:	: .70:1.05:	: .60:1.15:	: .50:1.20:	: - :1.90	
(Unskilled)	: : :	: : :	: : :	: : :	: : :	: : :	
" (Semi-skilled)	: .70:1.45:	: 1.00:1.20:	: .85:1.20:	: .70:1.35:	: .60:1.30:	: - :2.10	
FF Strawboss	: .80:1.70:	: 1.05:1.40:	: .90:1.40:	: .80:1.40:	: .75:1.20:	: - : -	
FF Crew Boss	: 1.50:2.10:	: 1.05:1.55:	: .90:1.60:	: .90 :1.65:	: .85:1.45:	: - :2.30	
FF Sector Boss	: 1.65:2.30:	: 1.20:1.90:	: - :1.90:	: 1.00:1.85:	: .95:1.55:	: - :2.60	
FF Division Boss	: 1.75:2.40:	: - : - :	: - :2.10:	: 1.10:2.25:	: - : - :	: - :2.90	
FF Smokechaser	: .80:1.55:	: - :1.35:	: .90:1.35:	: .80:1.50:	: - : - :	: - :2.10	
FF Pump Operator	: 1.00:1.55:	: 1.20:1.35:	: - : - :	: 1.50:1.05:	: - : - :	: 2.50	
Power Saw Operator	: .75:1.80:	: - :1.50:	: - :1.65:	: - :1.80:	: - :1.25:	: - :2.75	
Bulldozer Operator	: 1.25:2.00:	: 1.35:1.85:	: - :2.00:	: 1.30:2.00:	: - : - :	: - :2.45	
Tractor Operator	: 1.25:1.90:	: - : - :	: - :2.00:	: 1.30:1.75:	: - : - :	: - : -	
Truck Driver I	: .84:1.60:	: 1.05:1.35:	: - :1.35:	: .80:1.35:	: .65: - :	: - :2.15	
Truck Driver II	: .92: - :	: 1.20:1.50:	: - :1.50:	: .90:1.50:	: - : - :	: - :2.30	
Packer	: 1.25:1.85:	: 1.05:1.50:	: 1.00:1.50:	: 1.25:1.50:	: - : - :	: - : -	
Tool Sharpener	: .75: - :	: 1.30:1.50:	: .90:1.50:	: .80:1.35:	: .70: - :	: - :2.10	
Saw Filer	: 1.00:1.60:	: - : - :	: - : - :	: 1.10:1.50:	: .85: - :	: - :2.10	
Cook's Helper	: .70:1.30:	: .95:1.05:	: .60:1.05:	: .75:1.25:	: - :1.20:	: - :2.00	
Second Cook	: .95:1.50:	: 1.00:1.50:	: .65:1.40:	: 1.00:1.50:	: 1.00:1.00:	: - :2.00	
Camp Cook III	: 1.05:1.65:	: 1.20:1.60:	: 1.00:1.50:	: 1.12:1.65:	: - :1.45:	: - :2.50	
Camp Cook IV	: 1.25:1.85:	: - : - :	: 1.25:1.60:	: 1.25:1.75:	: 1.25:1.35:	: - :2.70	
FF Radio Operator	: 1.00:1.70:	: 1.30:1.35:	: - :1.45:	: .65:1.40:	: - : - :	: - : -	
FF Timekeeper	: 1.00:1.70:	: - :1.50:	: .95:1.90:	: .70:1.75:	: - :1.25:	: - : -	
FF Camp Boss	: - : - :	: - : - :	: - : - :	: 1.00:1.85:	: - : - :	: - : -	
FF Airplane Cargo Dropper	: 2.25:2.40:	: - : - :	: - :1.90:	: 1.75:2.00:	: - : - :	: - :2.60	
FF Airplane Cargo Packager	: - : - :	: - : - :	: .85:1.50:	: .85:1.50:	: - : - :	: - : -	

*Includes subsistence. No overtime rate allowed.

The tabulation of wage trends merely represents the impact of inflation for wages as in the case of commodities, equipment and supplies.

Charts attached indicate:

Chart "A" - "Construction Cost Trends" -

Construction costs have increased from 90 in 1915 to 590 in 1953, or roughly six times.

Chart "B" - "Construction Cost Index" reflects cost increases as follows:

	<u>1915</u>	<u>1945</u>	<u>1953</u>
Materials	50	130	225
Skilled Labor	90	260	425
Unskilled Labor	90	310	610

Chart "C" - "Purchasing Power of the Dollar" reflects the inflation given earlier in this paper, that the 1947 - 1949 dollar was worth \$2.09 in 1940, 98.8¢ in 1950 and 87.6¢ in 1953 on the basis of retail food prices.

Chart "D" - "Illustrative Commodity Prices" merely illustrates the trend for bread, meats, blankets, gasoline, lubricating oils, shovels, and tractors.

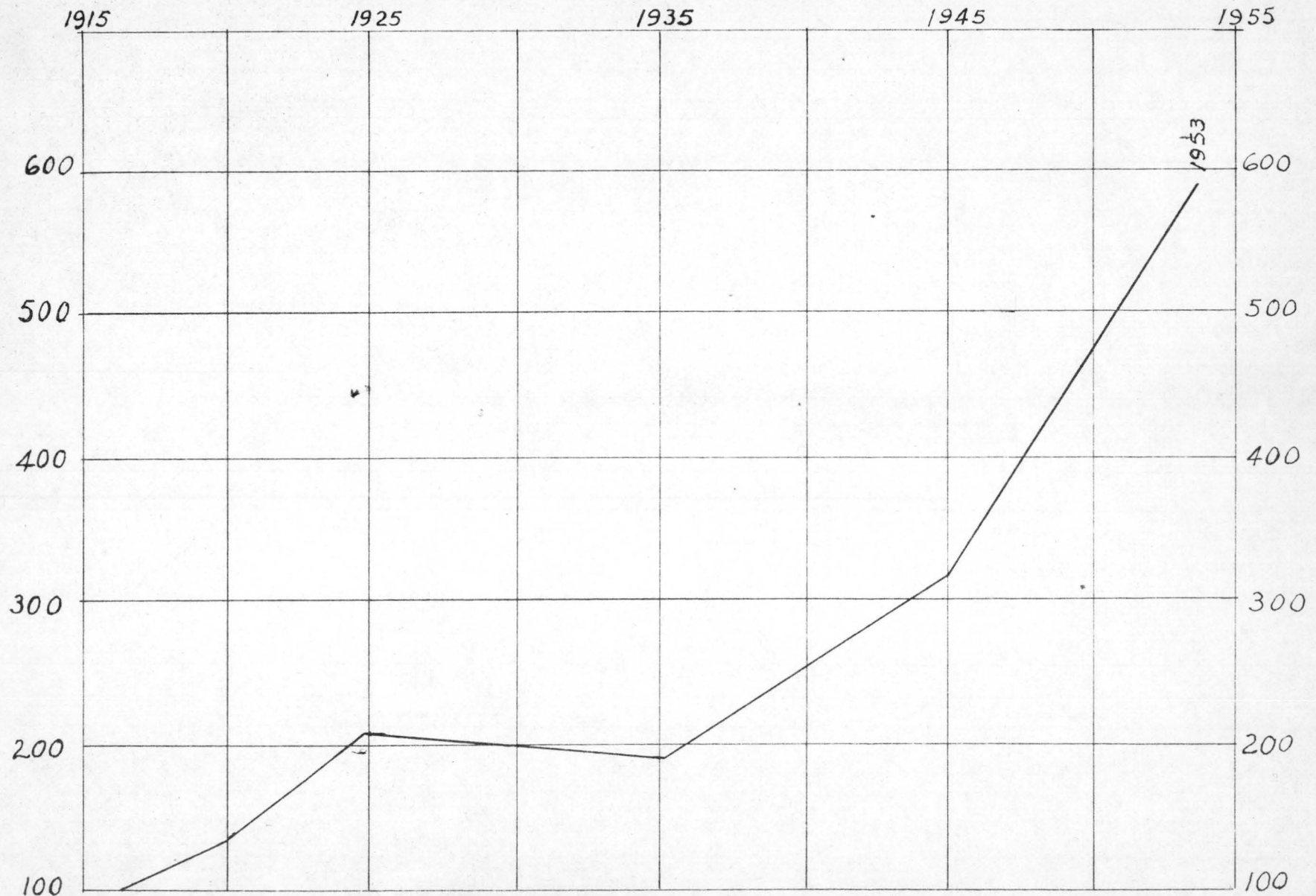
Chart "E" - "Wage Rate Comparisons" - illustrates the wage trend from 1939 - 1953 of \$23.86 per week to \$71.51.

All of these data clearly show why the fire protection job has become more and more difficult with the "rubber" dollar. When the 1947-1949 dollar has shrunk from a value of 166.9 in 1940 to 87.0¢ in 1953 (August), it means that our present dollar is buying roughly 50% of what it did thirteen years ago!

If any of the conferees want to get some ammunition or do some "home work" with the data in my office, I assure you you will "count sheep" in the wee small hours - and I'll be glad to ship the material - express collect!

CONSTRUCTION COST TRENDS:
Engineering News Record.

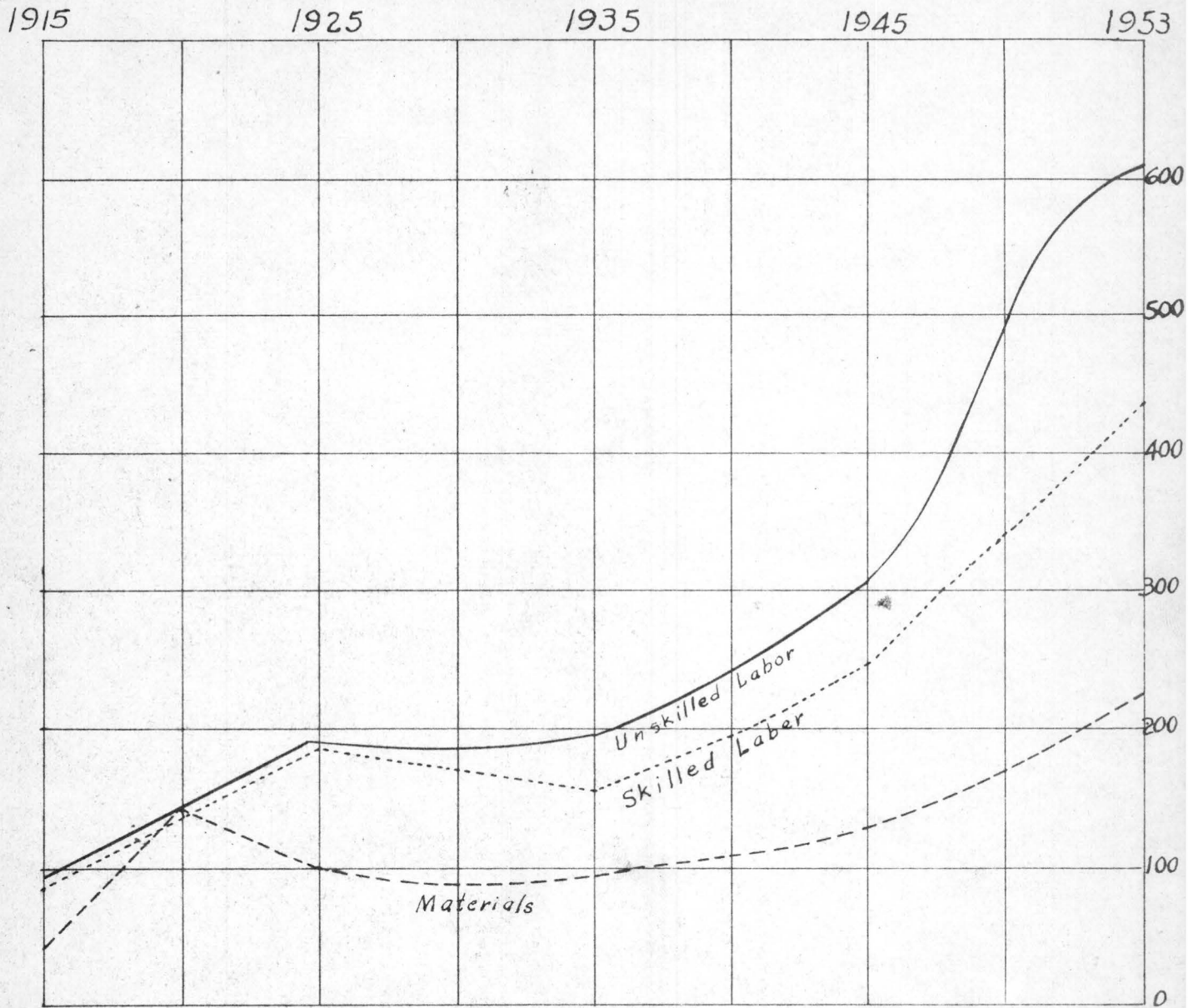
$$\text{Ratio } \frac{1953}{1915} = \frac{590}{90}$$



VII-A
Chart - A -

CONSTRUCTION COST INDEX

Engineering News Record October 8, 1953



Materials	-----	$\frac{225}{50}$	} ----- $\frac{1953}{1915}$ Ratio
Skilled Labor	-----	$\frac{425}{90}$	
Unskilled Labor	-----	$\frac{610}{90}$	

Chart-B-
VII-A

PURCHASING POWER OF THE DOLLAR
Wholesale, Consumer and Retail Food Prices
U.S. DEPT. OF COMMERCE
(1947-1949 = 100.)

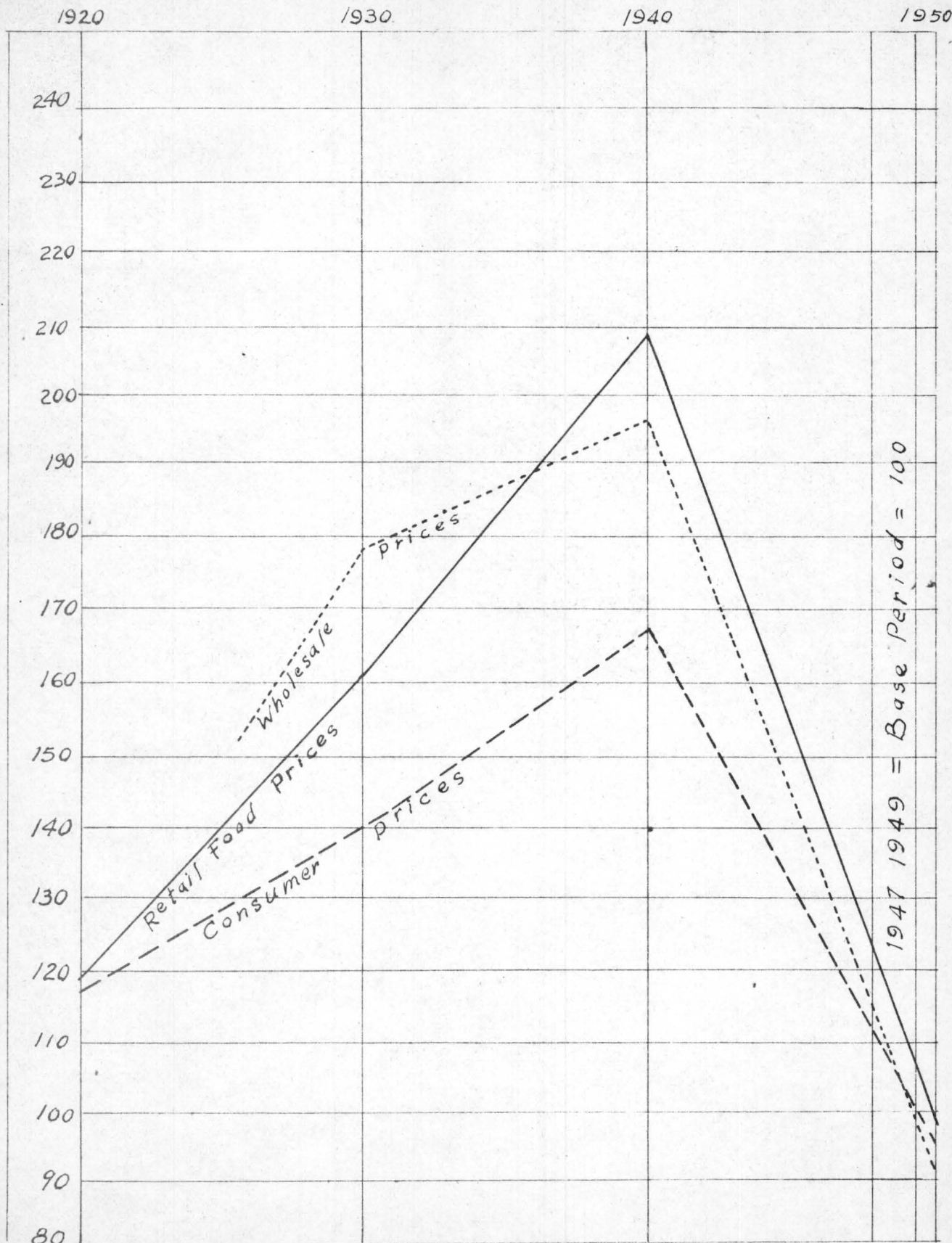


Chart - C -
VII-A

ILLUSTRATIVE COMMODITY PRICES

(1947-1949 = 100) - U. S. Department of Labor

As of August, 1953:

All Commodities - - - - - 110.6

" " , except farm and food - - - - - 114.8

Bread - - - - - 116.4 to 129.6

Meats - - - - - 97.6 to 116.2

Blankets - - - - - 127.9 to 131.2

Gasoline - - - - - 119.4 to 137.3

Lubricating Oils - - - - - 68.0 to 121.5

Shovels - - - - - -138.4

Tractors - - - - - -102.6 to 136.6

Chart "D"

WAGE RATES - COMPARISONS - U.S. DEPT. OF LABOR

Average weekly earnings of production workers in manufacturing industries
in current and 1947 - 1949 dollars.

<u>Period</u>	<u>Amount</u>	<u>Gross Average</u> <u>Weekly Earnings</u>
		Index (1947-49 = 100)
1939	\$ 23.86	45.1
1940	25.20	47.6
1941	29.58	55.9
1942	36.65	69.2
1943	43.14	81.5
1944	46.08	87.0
1945	44.39	83.8
1946	43.83	82.8
1947	49.97	94.4
1948	54.14	102.2
1949	54.92	103.7
1950	59.33	112.0
1951	64.71	122.2
1952	67.91	128.4
1953 (July)	71.51	135.1

THE DEPRECIATED DOLLAR AND ITS IMPACT ON THE STRENGTH
OF FIRE RESEARCH

IMPROVING FINANCIAL MANAGEMENT - RESEARCH

FINANCIAL NEEDS FOR ADEQUATE PROTECTION AND FOR IMPLEMENTATION
OF AN ADEQUATE FIRE RESEARCH PROGRAM

Presented by

R. W. Cowlin
Director, Pacific Northwest Station

Topic VII - Subtopics A, B, and C

FIRE CONTROL CONFERENCE, 1954

MAJOR TOPIC NO. VII. FIRE FINANCING - ADMINISTRATION AND RESEARCH

Subtopic A. The depreciated dollar and its impact on the strength of the fire control organization and on fire research

(Fire Research Section)

Dollar depreciation has had a manifold and insidious effect on the strength and direction of fire research since World War II. A direct analysis of inflationary impacts through tabulation and comparison of salary increases and other rising costs is impressive but incomplete. Likewise, a comparison of actual dollars available for fire research in the fiscal years 1945 and 1953 does not tell the entire story. They do provide, however, a starting point for discussion, and demonstrate conclusively that fire research has been materially weakened through dollar depreciation. For example, the total F. Y. 1945 appropriation to the Forest Service for fire control research was \$64,803 compared to \$133,104 in F. Y. 1953. On the surface this would seem a substantial increase in funds available for research purposes. However, considering that appropriations for F. Y. 1945 were influenced by wartime conditions, some other basis for making a comparison must be developed. Before World War II greater strength in manpower and in funds was available for fire research than in F. Y. 1953. In fact, actual allotments for fire research in 1938 were practically equal to the 1953 total. Chart 1 illustrates this condition.^{1/} Recovery from wartime reductions in funds has not been complete

^{1/} Although charts 1, 2, and 3 do not cover 1952 and 1953, they are adequate for our discussion since 1951 values approximate those for 1952 and 1953.

regardless of fluctuations in the purchasing power of the dollar. Indirectly this is unquestionably a product of dollar depreciation. The influence on Congress of demands upon the Federal Treasury to pay wartime costs plus the current defense program expenditures has limited absolute availability of funds for research projects. For many years regional P&M fire funds have been a timely supplementary source of financing for fire research. This practice yielded benefits in excess of the actual dollars made available in this way because it promoted tight coordination between research and administration. This resulted in sharper definition of problems and more prompt production and application of research findings. Impact of dollar depreciation on administration fire control activities is drying up this supplementary source of funds and will inevitably weaken the link between research and administration. Expenditures for fire control have risen from about 6 million dollars in 1933 to nearly 50 million dollars now while fire research funds to all purposes have remained nearly stationary (see chart 2). Less than 0.25 percent of the total fire control expenditures are currently spent on research (chart 3). Considering the tremendous increase in values at stake as stumpage prices have skyrocketed, this is truly a niggardly showing. Many industries spend up to 5 percent of their revenues on research.

Directly salary increases have increased the cost of personnel about 60 percent. For example, entrance salaries of a GS-7 and a GS-9, respectively, have increased from \$2,600 and \$3,200 during F. Y. 1945 to \$4,205 and \$5,060 during F. Y. 1953. Chart 4 shows the number of men fire research funds could finance by years 1933 to 1953. The first

statutory salary increase in many years was granted effective June 30, 1945, the close of F. Y. 1945. Since then there have been four more increases. Other costs have also gone up in unison--per diem and travel costs have increased about 40 percent from 1945 to 1953.

Another factor has operated to increase salary costs. With a contracting program of fire research new recruitment at the lower professional levels has been minimized. At the same time deserved and essential grade promotions to existing personnel have raised the average grade of fire research personnel roughly two grades, according to all the information I could easily assemble. This sort of analysis could be made precisely by checking each of the fire research personnel employed during the two comparative periods. But this tedious process is unnecessary to prove the point. From all evidence I could find, I believe that the 1953 dollar buys roughly half what it did in research services in 1945. In other words, as a result of dollar depreciation we have not \$133,000 but \$65,000 worth of research in F. Y. 1953.

It might be argued that the grade promotions cited above should result in greater research production because of the increased skill and experience of the personnel. This is partly true but without the adequate financing for a balanced staff personnel loses efficiency because higher grade personnel are spending some time on jobs that would have been done by subordinates. Further, special talents cannot be employed to full advantage.

In summary it can be demonstrated that dollar depreciation has first limited the absolute availability of funds for fire research despite

a constant increase in fire control expenditures and values protected. Secondly, dollar depreciation has practically halved effectiveness of available funds through increasing cost of personnel and facilities.

Subtopic B. Improving financial management

Although this subtopic was not directed toward research, improving financial management exists both as a research problem and as a problem in conducting research. Through research financial management of fire control can be improved. Furthermore, through effective financial management in the broad sense research funds can be maximized. Examples of efforts in this direction are recent reorganization and consolidation of experiment stations and proposals for concentration of fundamental research at a few centers in "A Policy for a More Adequate Forest Fire Research Program," March 7, 1952, prepared by Jemison, Buck, and Brown. To develop this subject properly would encroach seriously upon the time allotted for this subtopic; however, it will be introduced at times in the presentation of Subtopic C, which follows, in order to complete the point under discussion.

Subtopic C. Financial needs for adequate protection and for implementation of an adequate fire research program

I realize that opening up the subject of fire research problems could lead to prolonged discussion, nevertheless I can't conceive of discussing financial needs without some consideration of major research problems.

Traditionally the Branch of Research divides fire research projects into three broad categories--Behavior, Control, and Effects. This

will not suffice for our purpose today and since a detailed project breakdown under those categories would take too much time I will cite major problems resulting from a canvass of the various stations and regions. Also considered were the recommendations resulting from the October 26-28, 1953 meeting of the Forest Research Advisory Committee. Fairly general agreement was obtained upon these as needing attention countrywide: (1) Hazard reduction--chiefly centering around disposal of logging slash; (2) improvement and extension of fire danger rating systems; (3) improved technique for evaluating damage; (4) behavior of wild fires and conditions affecting resistance to control; (5) use of fire as a land management factor; (6) the fire control organization and tools--how can they be improved; and (7) the human problems in fire control--chiefly centering around incendiarism and irresponsibility. The above are not listed in order of priority, although we welcome your comments on this matter.

With this general background the statement of financial needs which follows can be judged better for adequacy than if it had been presented alone.

This is one of a series of studies and reports of financial needs of an adequate fire research program and not necessarily the last. I doubt if any problems have been overlooked by the various research units in estimating financial needs. However, it is possible that new problems will develop or that a change of emphasis will be needed. This group is most competent to discuss this aspect and as a result of our meeting we may arrive at different conclusions. The financial estimate was compiled

from reports from all the western stations, Region 10, and the Lake States and Southeastern Stations. It is a composite program and has the inherent drawbacks of such a process. However, I doubt if the total amounts involved would change materially even if we attempted to repeat the thorough study made in 1951. Whether we accept the concept of centralizing fire research at a few selected stations or work centers would affect the distribution of funds but not necessarily the total amount in my opinion. The amount of cooperative financial contributions forthcoming would be influenced by the type and organization of the research program.

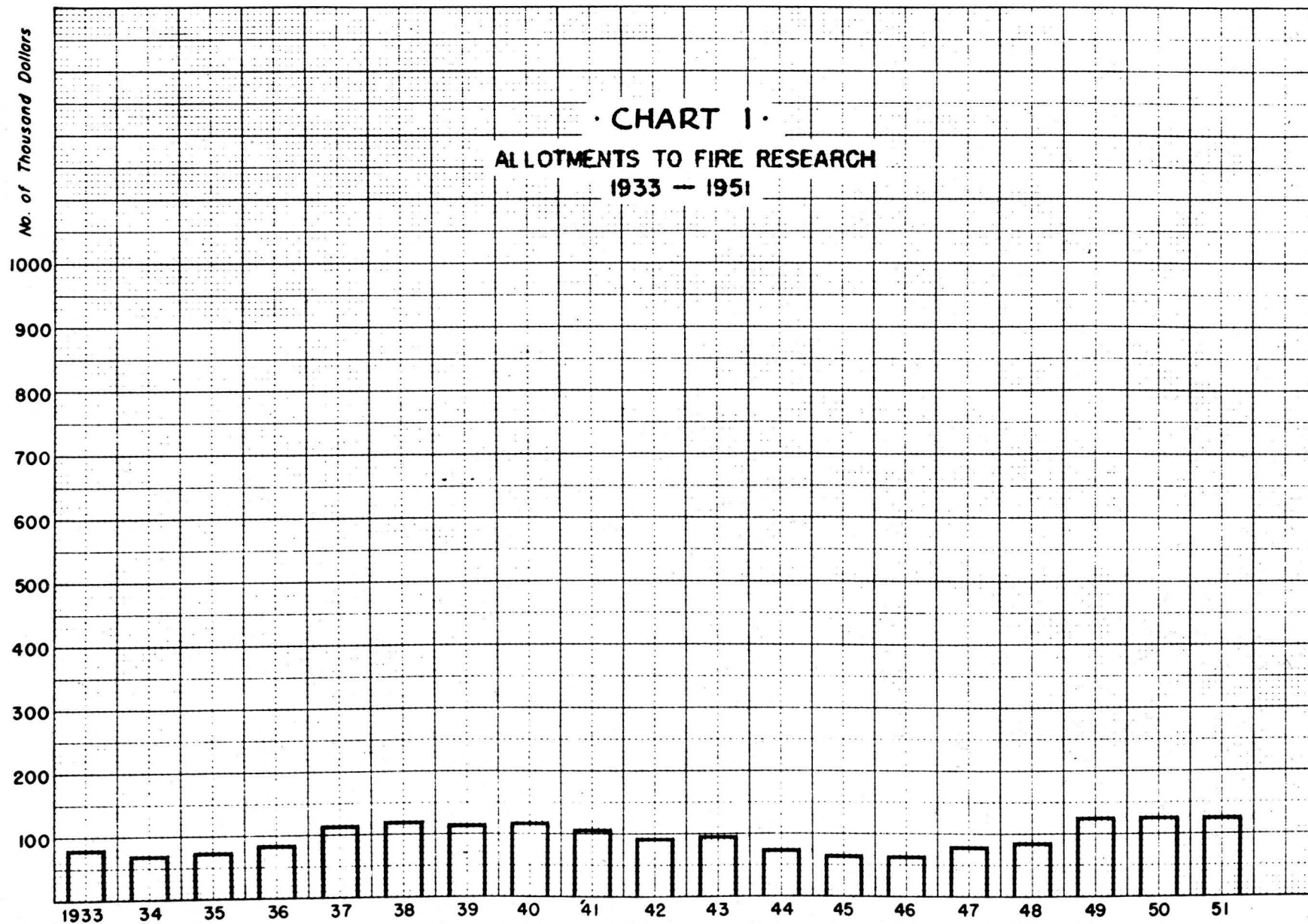
We estimate an annual total of ^{611,000}~~\$560,000~~ as needed, of which ^{544,000}~~\$492,000~~ are recurring expenses for personnel, travel, supplies and material, overhead, etc., and ^{67,000}~~\$68,000~~ is development expense for equipment, buildings, etc. These estimates were based upon an annual average for a 5-year program. Table 1 gives the details of these figures.

Compared to annual expenditures for fire control of 50 million dollars, this amounts to roughly 1 percent, which is certainly a reasonable request. An attempt was made to estimate anticipated cooperation under such a program but it did not yield uniform results. This would, of course, vary not only with the factors mentioned previously but also with the amount of Federal money available. At the least I should think the Federal Government should provide half or approximately ^{300,000}~~\$280,000~~ annually.

Table 1.--Estimate of costs and man-months employment needed for adequate fire research program

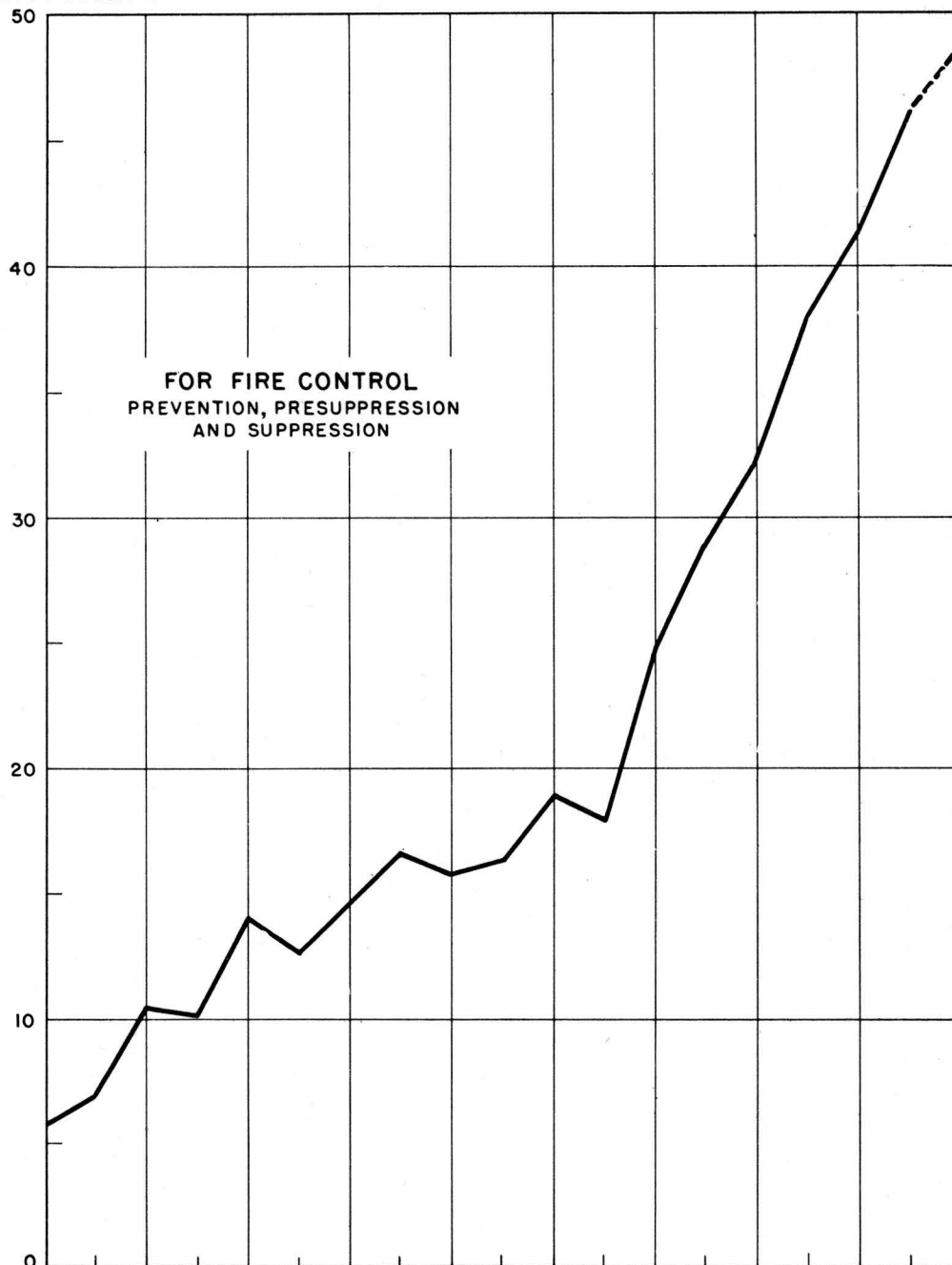
Item	Present dollars and man-years available for fire research ^{1/}		Estimate of man-years and dollars needed to accomplish program	
	Man-years	Dollars	Man-years	Dollars
<u>Recurring expenses</u>				
Station personnel	3.5	19,931	11.0	70,000
Project personnel	11.0	71,662	50.0	282,240
Clerical workers	2.0	6,039	15.0	50,450
Other auxiliary personnel (Field assistant and part-time specialist)	1.0	2,759	19.0	59,000
Travel (EO&R, per diem, etc.)	XXX)	11,267	XXX	82,310
Supplies and materials	XXX)		XXX	
Miscellaneous expenses	XXX)		XXX	
Other	XXX)		XXX	
Total recurring expenses	17.5	111,658	95.0	544,000
<u>Development expenses (Annual average next five years):</u>				
Equipment needed	XXX		XXX	30,000
Housing (dwellings, barracks)	XXX		XXX	7,000
Other	XXX		XXX	30,000
Total development expenses				67,000
Grand total expenses		111,658		611,000

^{1/} Does not include W.O. funds.

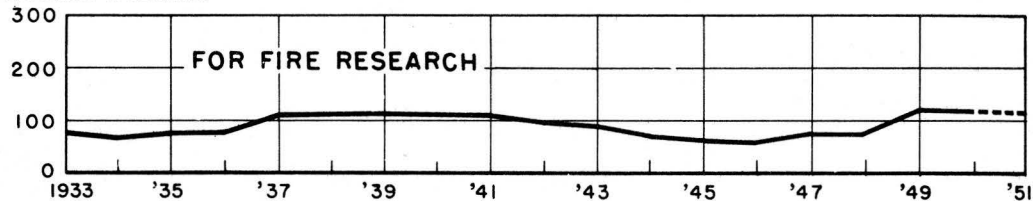


• CHART 2 •
TRENDS IN FOREST FIRE FUNDS—1933 TO 1950
 (EXPENDITURES UNDER U.S.D.A.—NATIONAL FORESTS, STATE AND PRIVATE ONLY)

MILLION DOLLARS



THOUSAND DOLLARS



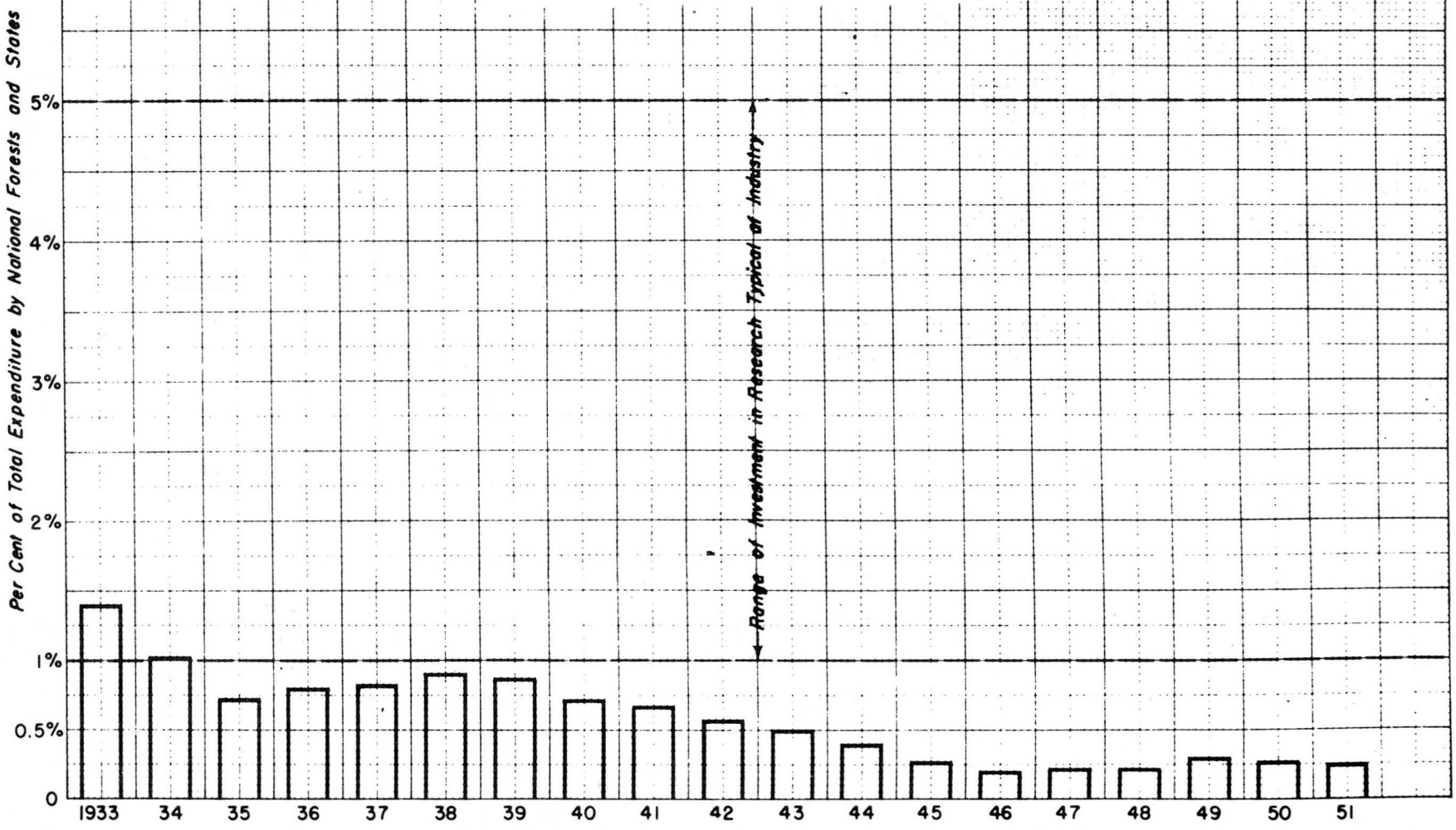
· CHART 3 ·

RESEARCH FINANCING IN FIRE CONTROL IN RELATION TO FUNDS
AVAILABLE FOR FIRE PREVENTION AND SUPPRESSION

1933 - 1951

(National Forest, State, and Private only)

Per Cent of Total Expenditure by National Forests and States



•CHART 4•

NUMBER OF MEN FIRE RESEARCH FUNDS COULD FINANCE

1933 - 195

No. of Men

50

40

30

20

10

1933

34

35

36

37

38

39

40

41

42

43

44

45

46

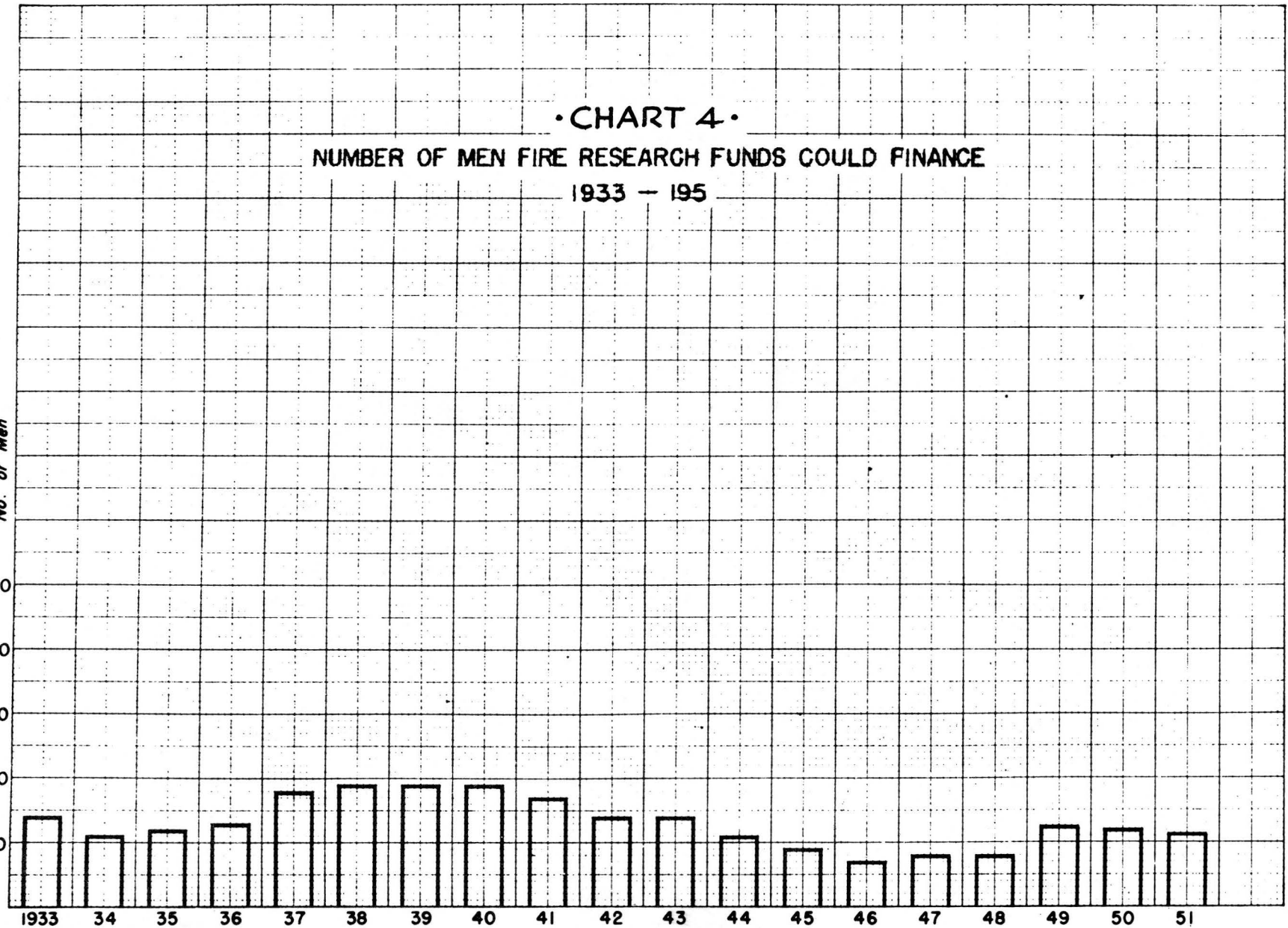
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48

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51



SECTION 1.

MAJOR TOPIC NO. VII - FIRE FINANCING - RESEARCH. 2/10/54.

ESTIMATE OF MAN YEARS & COSTS TO ACCOMPLISH ADEQUATE FIRE RESEARCH PROGRAM.

	Southern Sta.		Pacific-Northwest		California Sta.		Northern-Rocky Mtn.		Lake States		Rocky Mtn-Southwest		Alaska Sta.	
	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS
RECURRING EXPENSES														
STATION PERSONNEL....	¾	4,000	1½	10,000	2	12,000	3	23,500	1	8,000	½	2,500	-	-
PROJECT PERSONNEL....	3	21,000	12	54,000	10	50,000	9	49,500	4	25,000	2	15,000	2	18,000
CLERICAL WORKERS.....	1	3,000	2	6,000	2	7,000	3	9,500	2	8,000	2	8,000	-	-
OTHER AUXIL. PERSONNEL..	2½	5,000	5	12,500	1	6,000	4	12,500	6	20,000	-	-	-	-
TRAVEL, SUPPLIES, MISC....		5,500		7,500		25,000		15,000		10,000		2,000		7,000
TOTAL RECURRING EXPENSES	7¼	38,500	20¼	90,000	15	100,000	19	110,000	13	71,000	4½	27,500	2	25,000
DEVELOPMENT EXPENSES (Annual Aver. next 5 yrs.)														
EQUIPMENT.....		-		-		5,000		20,000		4,000		1,000		-
HOUSING.....		-		-		-		5,000		-		2,000		-
LABORATORY FACILITIES..		-		-		25,000		-		-		-		-
OTHER.....		-		-		-		5,000		-		-		-
TOTAL DEVELOPMENT EXPENSES						30,000		30,000		4,000		3,000		
GRAND TOTAL ANNUAL EXPENSES	7¼	38,500	20¼	90,000	15	130,000	19	140,000	13	75,000	4½	30,500	2	25,000

SECTION 2.

South-Eastern Sta		North-Eastern		Total Station Needs		Less Present Available Dollars & Man Years		Estimated Increase Needed, Need, minus present financing, Stations only.		W. O. Research Needs		Less Present Available W.O. Dollars & Man Years		Total Estimated Needs For Research	
MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS	MAN YEARS	DOLLARS
2	8,200	¼	1,800	11	70,000	3½	19,931	7½	50,068						
7	43,800	1	5,940	50	282,240	11	71,662	39	210,578						
2	6,000	1	2,950	15	50,450	1¾	6,039	13¼	44,411						
½	3,000	-	-	19	59,000	¾	2,759	18¼	56,241						
	9,000		1,310		82,310		11,267		71,043						
11½	70,000	2¼	12,000	95	544,000	17	111,658	78	432,342						
	-		-		30,000		-		30,000						
	-		-		7,000		-		7,000						
	-		-		25,000		-		25,000						
	-		-		5,000		-		5,000						
					67,000				67,000						
11½	70,000	2¼	12,000	95	611,000	17	111,658	78	499,342						

45,600
3,400

FIRE FINANCING - ADMINISTRATION AND RESEARCH
IMPROVING FINANCIAL MANAGEMENT (FFF-P&M-FIRE COOP.)

By

M. M. Nelson, Chief,
Division of Fire Control, R-5

Presented at

FIRE CONTROL CONFERENCE
Ogden, Utah, February, 1954

Topic VII-B

FIRE FINANCING - ADMINISTRATION AND RESEARCH

Improving Financial Management (FFF-P&M-Fire Coop.)

Introduction:

The depreciated value of the dollar has been rather fully discussed in previous topics. Since we have less "buying power" to do the same job, it is more important than ever that every method possible be used to improve our financial management of the depreciated dollar we have to work with.

I am no magician. I have no "rabbit to pull out of a hat" that will point the way of improving our financial management. There are, however, things that all regions have been doing along this line. Many of them have already been mentioned in this room. No doubt each of us can take new ideas back to our own region that can be of help to us in this important management field.

How is our seasonal force dollar being spent?

Before going further with this subject we might pause to see how we are now spending our seasonal force funds. Based upon the financial sheet Gustafson has had each of us prepare in connection with his W.O. functional inspections I have prepared a bar graph. This graph shows our entire seasonal force funds (P&M, Public Domain, Coop., Flood, etc.) broken down into three items:

1. Direct expense to Initial Attack Personnel.
2. Direct expense to other fire control personnel such as Fire Control Assistants, Dispatchers, etc.
3. Miscellaneous.

The first part of the graph shows that in the western regions the percentage of funds going directly into initial attack varies from 51% in R-1 to 73% in R-6. R-2 has 59%, R-3, 61% while Regions 4 and 5 each show 65%.

The second part of this graph indicates the percentage used for "other fire personnel" varies from 10% in R-6 to 33% in R-1.

For Regions 8 and 9, 82% of these funds is used for fire personnel but the division between initial attack and other is not available.

The third part of graph #1 shows the percentage of seasonal force funds used for Miscellaneous purpose. For the most part this goes into such items as radio maintenance, building maintenance, equipment purchase, mapping, building construction, etc. The amount varies from 8% in R-5 to 19% in R-2 and 18% in R-8 and R-9. Where the information was available, we have tried to show the part that was used for such items as just named.

It would be most difficult for any of us from one region to say that the percentage breakdown for another region is out of line. But we might get some ideas that can help us back home.

Use of P&M-101 for other than fire.

Regional Forester Olson in helping us prepare for this major topic asked each region several questions. The results have been prepared in graph form. The questions were:

1. What part of your P&M-101 funds is used for other than fire purposes? Answers from all regions except R-9 indicate that four regions report no drain of fire funds (Regions 2, 3, 7 and 8), while four regions show varying percentages used for other than fire: R-1, 1.75%; R-4, 2.5%; R-5, 1.77% and R-6, 6% (Graph #2).
2. What part of your P&M-101 funds is used for the base allotments over the amounts financed from the W.O.? Here again we find four regions using from 2.5% to 13% of their allotment to increase the W.O. base. (See Graph #2).

I surely wish I had words of wisdom as to just how we can keep all seasonal force dollars in the "fire till". I will say that a much tougher job of the Fire Control Chief than actually fighting fire is to fight for the fire funds in a financial staff meeting where you are outnumbered 8 or 10 to 1. Apparently, the so-called "have not divisions" continue to get pressure from above to get jobs done that are beyond their means as allotted in the Base. Surely the Base does not begin to meet the problem of maintenance of improvements.

The other questions concerned FFF dollars:

3. How much FFF is used for Emergency Guards?--(average for five years). And, what is the FFF emergency guard expenditure expressed in percentage of the estimated increase in P&M needed for additional personnel for adequate protection?

The answers to the first of these questions are directly reported and shown in Graph 2. Region 7 was low with \$8,200 while R-8 was high with an average of \$172,100.

The answer to the second question shows a wide range from 6.7% in R-5 to 100% in R-8. (Chart 2).

Use of FFF for Emergency Manning.

Since the graph shows an average over \$600,000 used for emergency manning it might be well to go further into this subject. I might start by saying that R-5 in the past two seasons has gone much heavier into FFF emergency manning than the five-year average indicates. The 6.7% shown for R-5 might indicate that this is justified.

It seems to me that there are four essential items of a sound emergency manning plan:

1. A good sound fire danger system upon which to base the need for emergency manning. ~~The fire danger rating must be studied carefully to determine the degree of fire danger justifying added~~

protection. We know that the relative opportunity of a fire starting in a very high F.D.R. day is greater than in a medium F.D.R. day. Likewise, the size of the average fire starting during high F.D.R. will be tremendously larger than one starting on a day of low F.D.R.

Examples for Southern California are:

The average size of a fire starting on a day when the F.D.R. is 10 will be 9 acres, the same fire starting under a F.D.R. of 50 will burn 1,140 acres, or under an F.D.R. of 90 will burn 3,450 acres. If the chance of start is 1.0 on a medium day, it would be 1.65 on an extreme day.

2. A good sound analysis of steps that should be taken under different classes of fire danger during difficult times of the year. There are many steps that can be taken under different conditions; and they can and should be far more than employment of men from FFF. They can include additional prevention effort, shifting of crews, adding cooperator help, standby of fire crews or equipment, checking particular hazards, notifying certain people, agencies, forest users, industrial operators (who in turn put into effect a predetermined plan), etc., etc.
3. It must be simple and flexible enough to be readily usable by rangers, but detailed and rigid enough to be a sound management tool where its use can not be challenged as being financially unsound.
4. It must be correlated with other similar plans and approved by the Regional Office.

underline entire para
It is my contention that such a sound emergency manning plan can be a tool that will definitely pay big dividends in saving of resources and dollars. Statements from the various regions indicate that some regions have such sound emergency manning plans while others lack some of the essentials. The very best F.D.R. system possible is the base upon which to build.

Reducing FF Expenditures on Large Fires.

There are, no doubt, hundreds and maybe thousands of small things that could be done that would help reduce expenditures on large fires. Already in this meeting we have discussed many items that can have a direct bearing on reducing such costs.

All of you have heard the statement made that, "fire is like war; war is wasteful and, therefore, fire is wasteful." I think the first thing we have to do if we want to get down to business on reducing FF expenditures on large fires is to stop the rumor that large fires have to be wasteful. I think we have to sell ourselves on an attitude that fires do not have to be wasteful. They can be managed just as well as any other project and just as efficiently if we make up our minds to do so and make the proper preparations. Call it "cost consciousness" if you like or if you prefer "just sound management."

Before going further with discussing some of the major items of saving FF on large fires, let's determine where the big expenditures occur and, thereafter, look at what might be done to help reduce them. (Show chart showing expenditures on Fish Fork Fire). This chart was prepared for other purposes than showing at this meeting; but since it has been prepared based upon our analysis of one large fire, I am showing it here. Since it was prepared, several of our forests including some in northern California have analyzed their FF expenditures and found that the percentage used in various items is almost identical with that shown for this large fire.

First of all, let's note that the greatest expenditure is for salaries--42%. Region 6 estimates that their salary expenses run just a little over half of their total FF. The second largest bill is that of transportation of men and materials. The third largest is purchase of food, being 11%. 10% goes into tools and miscellaneous supplies. 8% to helicopters and other fixed-wing aircraft; and 6% was used in the hire of tractors.

It seems to me that there are three major items where we can make real money in watching our FF costs on large fires.

1. FF labor.

The major part of our FF dollar goes for the payment of labor on a fire. As has been pointed out in this conference, cost of labor has increased greatly. An hour or two hours of a sector crew wasted is now a mighty costly item. In my experience and the experience of others with whom I have talked, I doubt if there is any forest in any region that is getting 100% efficiency from the labor that is placed on the line. If we were able to more nearly approach maximum efficiency with our labor, we would make a material saving. The answer is probably in better trained supervision--better "gang pushers." Several regions have made a conscientious effort to give foreman training. This seems essential. We, in Region 5, have made good use of Region 6's Foremanship Handbook in this regard.

There are, of course, other opportunities to get more nearly maximum production from crews. Some of them are in the matter of recruiting better crews to start with. Some work can be done in training crews that may be used in firefighting in advance of such firefighting. The crews that we have found to be of maximum efficiency in firefighting are our Hot-Shot Crews, specially recruited, specially trained, and hardened to do a maximum job on the fire line. Our second most efficient crew has been the trained Indian crews from Region 3.

2. Fire Management

Another place where substantial FF dollars can be saved or lost is in the over-all decisions involving the management of any large fire. Like any other project, the fire has to be analyzed and the plans made to do the job efficiently. Plans have to be made by men experienced in what the fire can be expected to do

in the particular type of country it is burning. Plans must be made for the efficient use of the tools that are available. If fire management calls for more tractors than necessary, more manpower than necessary, there is, of course, waste of both. At the same time, if the fire manager is too conservative in appraising the situation, the losses may be even greater. It takes maximum skill to manage a project fire. The answer is, of course, the placement of those persons with the greatest ability for such management in the position of management of such large fires.

The second answer is in training of key overhead in all of the various aspects of large-fire management.

3. Financial or Business Advisor

I am not sure of the beginning of the position we now often refer to as the "business advisor," "administrative service advisor," or "financial advisor" on large fires. Perhaps it is like "Topsy," it has just grown. In Region 5, however, I think it was most fully developed by Harlow Wood and Supervisor Norm Farrell on the San Bernardino National Forest. There is nothing mysterious about this position. Frank Jefferson once said that if a Forest Supervisor could adequately manage his forest without his administrative assistant, he could adequately handle a large fire without a business advisor. Actually what we talk of in Region 5 in this matter of a financial advisor is the administrative assistant doing his job on fire as well as other projects on the forest. We do not hold that he has nothing to do until such a time as we get a major fire. Perhaps this is at variance with the new "Principles of Fire Organization," but we feel very definitely that this man has a job to do as soon as we start spending funds in any reasonable amount. Furthermore, we hold that his job is year-long and does not begin or end with a large fire. If he is doing his job properly, many of the snafu's that occur on large fires would be eliminated prior to the time the fire starts. He has a large job to do in preparing for the fire season the same as the Fire Control Officer has. There are timekeepers to be trained, equipment timekeepers to be recruited and trained, contracts to be prepared and signed in advance, arrangements made for supplies and materials and recruitment of men. These are the jobs of this same man we call a financial advisor on a large fire.

After the large fire is underway, he is of tremendous assistance in holding down costs by making sure that timekeeping is properly done, that we are not paying for more hours of tractor use than the tractors are actually putting in on the job, and we do not have more trucks standing by than are actually needed to do the job. He should see that food is purchased in locations where the best prices can be secured (this may mean securing quick bids for material), take immediate action in cases of possible claims for loss or damage to equipment, and help in many other ways where the skills of an administrative assistant or "financial advisor" are helpful.

I fully believe that the opportunities in this field for assisting us in reducing FF costs are great. Region 1 indicated that they used such people for the first time in '53; but then primarily to "straighten out a mess that might have been avoided." Region 2 says they have made headway in getting started in use of this position with good results. Region 3 in 1953 published a "Business Management Guide for Fire Suppression." They report that it has "really paid off." Region 4 states that they have not used this position, but they believe that it has merit.

The Board of Director Approach as a Money-Saving Tool.

A portion of this topic deals with reducing expenditures in P&M and other fire funds as well as FFF. When we speak of our regular seasonal force funds, probably the greatest thing that can be done in handling these funds wisely is the application of good, sound administrative practices. You all know what many of these sound practices are, but I want to talk for just a little about the Board of Director approach. By Board of Directors I mean the Supervisor, his staff officers, and his district rangers.

Several years ago on one or two forests in Region 5, the Board of Directors approach was developed to a high standard. Since that time, we have been urging that it be used on all forests, and it has been to a large extent, with marvelous results. I have no doubt that other regions may be using the same general approach. The approach resolves around the Board of Directors sitting down at a meeting periodically to determine the priority of work, financing of such work, responsibilities, division of finances based on priorities of specific jobs, etc.

Each project which is considered by the Board of Directors has first been worked up on a form called "A Project Work Order--Plan--Accomplishment Report." The items of labor, supervision, equipment and materials are all listed by estimated cost, the value that may be contributed, the balance required and the actual cost in "gold money" that is needed to do the job. It is indeed surprising to find what kind of jobs can be done when all of the various factors are considered in one over-all plan.

When the Board of Directors leave a meeting, they know exactly what projects have been approved for themselves and for their neighbors. The foremen and others that are going to be responsible for the projects have previously had an opportunity to propose such projects and work up a plan. Consequently they have keen interest in full accomplishment.

Another thing that is done by the Board of Directors is to look at the over-all forest program of work and projects to determine a fine correlation between such projects. This has resulted in opportunities to keep key fire personnel employed year-long or at least for extended periods, which in turn builds a stronger organization, both for fire and other project work. The foremen, whether they be fire crew foremen or others, know what the over-all program is and are made a part of it. Consequently, their morale is higher, they are cost conscious and we get a better over-all job. It makes them part of the forest or ranger district "team".

Just one example: Two years ago Gustafson and I inspected a forest in northern California where they were not using this Board of Director approach. The foreman of the crew had no idea how much it was costing per mile to run the Harmon-Herrington tanker up and down the highway to take care of a few campgrounds. Consequently, there was no effort to save funds by better planning the work and mileage of this expensive unit. Last year this same forest adopted the Board of Director approach. The very first result was a saving of \$15,000 per year in equipment costs only. Other results of higher efficiency, better morale, maximum production, and putting the dollar where it would buy the most were outstanding. I wholeheartedly recommend this Board of Director approach for all of our work.

Fire and Project Work Crews

Lacking sufficient seasonal forest funds to maintain an adequate fire organization should make all of us take a look at our "hole card" to determine whether or not we are making complete and full use of all of the resources that are available to us. To get at this question, we asked each region a number of questions revolving around the coordination of fire and project work crews. These questions were:

Are we taking full advantage of project work crews for fast, effective striking forces on fires on the high fire danger days when they are needed?

Do fire funds finance training of such crews to assure efficient crews when needed?

Could more effective use of such crews be made?

Are project crews planned with the thought of their usefulness in fire control or does the project work completely dictate the location, size, and organization of such crews?

The answers from the western regions all indicated that they felt a better job of correlating project crews into fire organization could be done. Region 9 was not heard from, but both Regions 7 and 8 felt they were doing a satisfactory job in this regard. I want to quote part of Art Hartman's answer because I think it is basic to this entire problem. He says, "On the premise that all employees on a ranger district (or forest) are members of the same team and all working toward the same objectives, the work of all activities or projects is adjusted to contribute the most advantage to fire protection up to the point where these adjustments do not handicap the other work." What he said that impressed me is that "all members are on the same team." That seems to me to be basic if we are going to do a reasonably good job of protection with what we have. We can't have a separate fire department pulling one way and other activities pulling another.

I don't want to leave the impression that the western regions are entirely lax in this regard. I merely said that they were honest enough to admit that they could do better. Five years ago as a forest supervisor I would probably have told you that we were doing a good job of correlating all of our crews. At that time I thought we were doing a

good job; but I have since seen some examples that far surpass anything that we were doing at that time in the way of correlation and integration of work crews into an over-all fire team on a forest.

If I can take time, I would like to tell you what is being done at the present time on the Plumas Forest. Two years ago the Regional Forester, after attending a series of Boards of Review, said that we had to make more progress in preventing man-caused fires. The number of man-caused fires on the Plumas Forest did not look good; therefore, it seemed a likely place to start making progress.

The Regional Forester formed a committee of which he was personally the chairman. Probably the committee did not come up with anything real startling in fire prevention; but they did insist that the prevention problem had to be analyzed, goals had to be set up, and a plan of action prepared to do a better job of prevention. The plan then had to be carried out and a follow-up made to determine its effectiveness, weak spots, etc. The Plumas Forest was chosen to be the first guinea pig. Other forests followed. The first reaction of the Forest was "give us more money and we can hire more prevention patrolmen." There weren't additional funds. The Supervisor got the "bug" and decided that if we could prevent the fires, we won't need to suppress them and, therefore, won't need to have the striking force that he once had. The Forest then analyzed its problem, determined that it needed to increase its prevention firemen from six to some fourteen in order to do an adequate prevention job. The money had to come from somewhere, therefore, fire crews had to be eliminated. The Fire Control Officer agreed with the Supervisor on the need for additional prevention but he didn't like to give up initial striking force. This being the case, they began to look at all of their resources to determine just what they had and how they could cover the holes that were being left by increasing their prevention force.

They went back to their basic fire planning map and determined that they needed initial attack forces in various locations on the Forest. They then set about to have some type of initial attack force in or near these locations during the peak of the fire season when it is important to catch all fires quickly. They looked at their road crews, their TSI crews, their slash crews, cooperators, and every other type of available help including the Supervisor and his staff. They found that they had TSI crews and regular fire crews in the same initial attack area. They shifted crews around. When a TSI crew is in an initial attack area this year, the fire crew is moved to another initial attack area. On the next year they might be reversed.

They found they had more cooperators than they had realized. Certain lumber companies had a vital interest in protecting the forest area and were perfectly willing to take steps to take initial action on fires within a certain initial attack zone especially on the higher fire hazard days. On certain very high fire danger days, a patrolman with a radio would move onto the landing where he could pick up a crew at a moment's notice and take off as an initial attack crew. TSI crews, road crews and others were trained for firefighting and initial attack.

On days when they were needed for initial attack, one member, paid from fire, would stand by on the radio. The dispatcher was given more control of this over-all organization, from day to day, so that a crew in one initial attack area which moved to the east to do work would be covered to a certain extent by other surrounding crews. At least the adjacent crews would not move off in the opposite directions leaving a large hole not covered for initial attack.

When the end of the 1953 season was added up, it was found that the Plumas Forest had, on the critical days where initial attack really pays off, nearly 95% of the planned force in our last replanning. Their fire funds financed only about 45%. The results were that the Plumas Forest in 1953 burned less national forest than any other California forest except the Eldorado which has been perennially low in burned area. They did this by reducing the number of fires and by attacking the fires while they were small. Other forests have carried out a similar plan with almost as striking results.

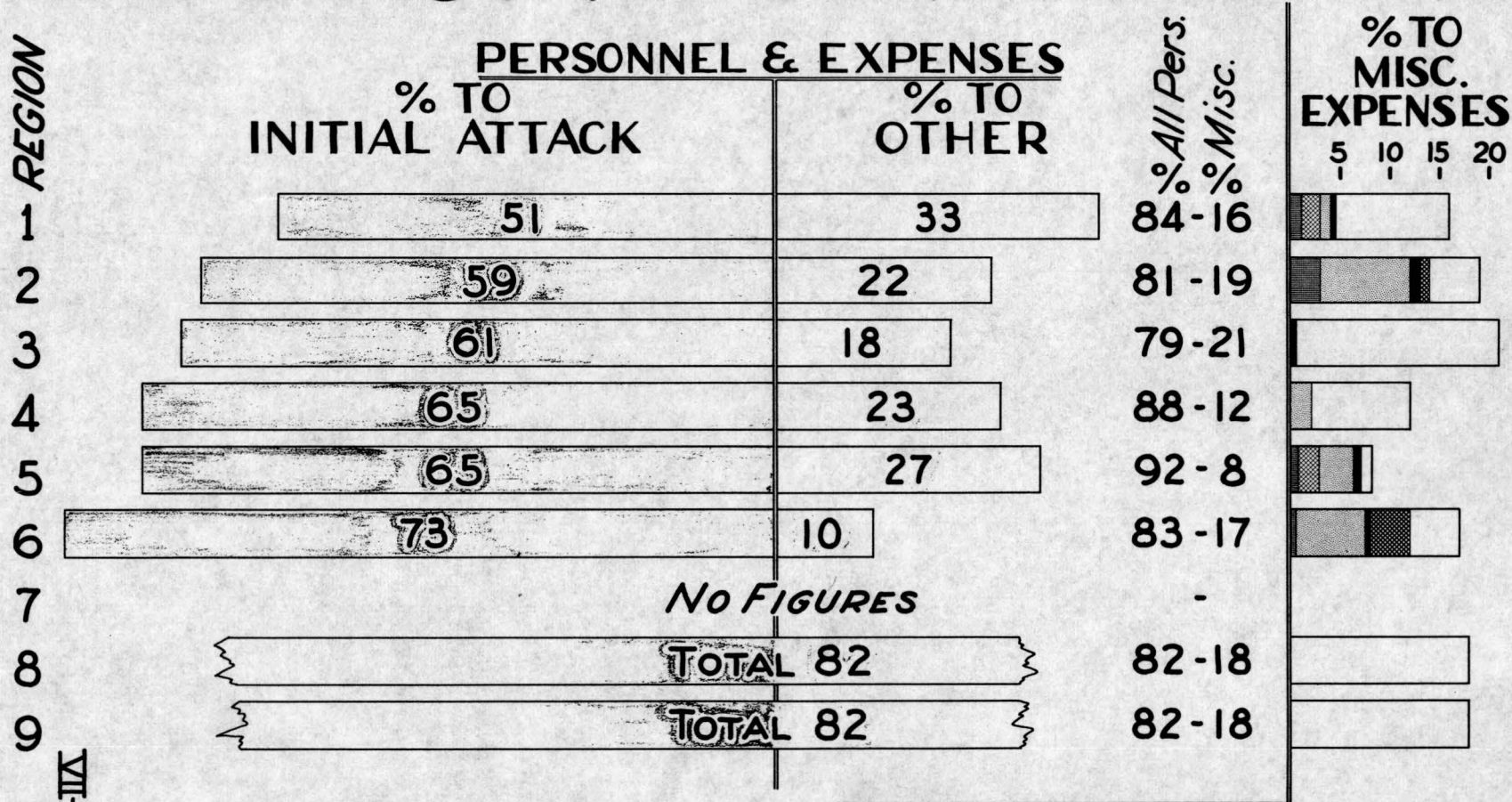
Local Cooperators

The Chief in his outline for this meeting raised the question, "Are we going as far as possible to interest locals, including industrial employees, in initial attack work?" He further states, "We feel we have slipped greatly particularly in the far west since the CCC days in the 'cooperator initial attack philosophy'." This was put in for discussion purposes since making full use of cooperators is one way we can stretch our P&M fire dollar. I am sure that immediately after the CCC days all of us felt a void when the camps left and we found ourselves in a position of not having the old cooperators trained and ready to go that we had had prior to CCC days. From the answers I received from the western regions, I do not believe that I can agree that we have "slipped" nearly as far as some people think. Conditions, of course, vary in different parts of different regions. Nearly all of the regions spoke of certain areas where the "cooperator initial attack philosophy" was just as good as it has ever been and often better because many of these former cooperators who used a shovel now had a tractor or other equipment to help out in fighting fire. In many places where the cooperator initial attack has slipped, it isn't because of lack of cooperation, it is because the people have actually moved out of the country and there just isn't anyone there to cooperate with. I gathered from the answers received from the regions that in industrial areas, where logging and other uses have moved in, we are better off than we were in the pre-CCC days so far as this phase is concerned. In Region 5 we have just completed a series of Boards of Review throughout the Region with every supervisor, fire control officer, and picked rangers from each forest. This matter of the old time cooperator for initial attack was discussed with those who had seen it in operation prior to CCC days. The consensus was that where the people are still in the country our cooperation is just as good as it had been previous to that time. I hope this subject is discussed further. I think some of us are "on the pan" for something that isn't entirely correct.

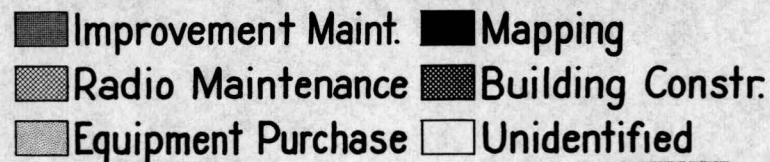
Reducing Cost by Fire Prevention

From the outline for the meeting I don't presume it was proposed that I cover fire prevention as a means of reducing costs. The case still remains that THE CHEAPEST FIRE TO FIGHT IS THE FIRE THAT IS PREVENTED--while THE SECOND CHEAPEST FIRE TO FIGHT IS THE ONE THAT IS CONTROLLED WHILE IT IS STILL SMALL.

THE SEASONAL FORCE DOLLAR



MISCELLANEOUS EXPENSES



VII-B - Chart-1

MANAGEMENT OF FIRE DOLLARS

P & M - 101 FUNDS (F.Y. 1954)

F.F. USED FOR EMERGENCY MANNING (5 YEAR AVERAGE)

REGION	PERCENTAGE USED		Dollars Spent	% of Estimated Amount Needed Above Present Allotment to Give Adequate Protection	
	For Other Than Fire Purposes	To Increase Base Allotment			
1	1.75% \$20,600		\$52,700	13.7%	1
2		\$28,200 13.0%	\$17,100	83.6%	2
3			\$101,300	26.0%	3
4	2.5% \$10,400	\$11,200 2.5%	\$64,200	54.0%	4
5	1.77% \$37,600	\$151,600 7.1%	\$146,600	6.7%	5
6	6.0% \$60,000	\$44,000 4.0%	\$77,800	60.0%	6
7			\$8,200	30.0%	7
8			\$172,100	100%	8

VII-B-Chart 2

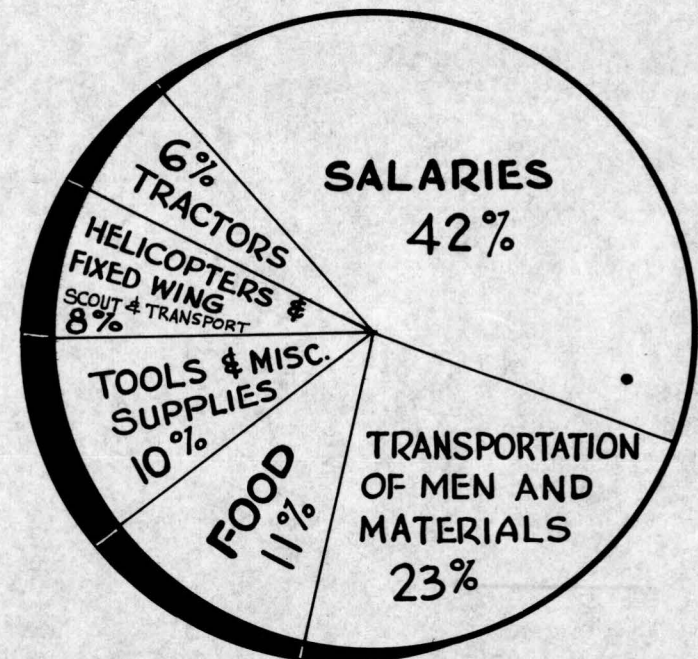
39%

AN EXAMPLE OF WHAT IT TAKES TO PUT OUT A FIRE

(FISH FORK FIRE)

DISTRIBUTION OF THE FFF DOLLAR

100		TRUCKS & BUSES
45		TANKERS
22		TRACTORS
10		CHAIN SAWS
23		PACK STOCK
3		HELICOPTERS
40		(FIXED WING) AIRCRAFT
1045		FIRE FIGHTERS
195		LINE OVERHEAD
32		TACTICAL OVERH'D.
227		SOS LABOR
74		SOS OVERHEAD



TOTAL COST \$550,000.00

FINANCIAL NEEDS FOR ADEQUATE PROTECTION

ADMINISTRATION

Presented by

A. E. Spaulding, Chief
Fire Control, R-1

Topic VII - C

MAJOR TOPIC NO. VII - FIRE FINANCING - Administration
Sub-topic C - Increased Financial Needs for Adequate Protection

TABLE NO. III - ALL-SERVICE SUMMARY

Gus Figures

	Region 1		Region 2		Region 3		Region 4		Region 5		Region 6		Region 7		Region 8		Region 9		Region 10	TOTAL DOLLARS
	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months	Dollars	Man-Months		
RECURRING EXP. & MAN-MOS.EMP.																				
Fire Control Staff Officers	98,194	282			27,000	60	4,500	8					See explanation (1) below		39,000	132	23,300	80	R-10 cannot answer this now. We are not satisfied with what we have, but we are unable to make recommendations for change until we gain more experience. Personnel too new in the region; must gain more experience with local conditions.	191,994
Detection Personnel (LO's)			4,333	20	53,000	200	11,400	46	29,240	118	17,500	70	10,369	45	82,500	330	82,000	400		290,342
Short-Term Prot. Personnel	266,092	965	10,000	40	259,000	980	72,500	290	1,783,053	7,530	62,700	225	2,478	13	172,500	810	1/ 48,300	200		2,676,623
Yearlong Protection Personnel					27,480	72	17,000	60			10,000	24	13,437	68	21,000	70	(Included in 1/ above)			88,917
Auxiliary Personnel	21,129	74	6,020	18	33,300	125	22,000	78			*15,000	51	See explanation (2) below							97,449
Training	9,860		500		10,000		7,000		6,000		2,500		4,222		9,000		5,300			54,382
Travel	10,200		1,300		5,000		10,000		300,000		5,000		3,227		9,200		19,500			363,427
Supplies & Materials	12,400		1,000		5,000		10,000		38,000		5,000		500				3,600			75,500
Contractual Services	20,625				3,000		1,200				2,000						600			27,425
Miscellaneous Expenses	18,000				5,000		1,000		26,000		1,000		1,383				2,500			54,883
Mtce. Gov't-owned Airplanes					5,000		2,000		6,000		5,000						2,000		20,000	
Fire Break Annual Mtce.			5,000		*10,000		1,000		10,000				950		5,200		2,000		34,150	
Other			*2,500		5,000		2,000										*28,600		38,100	
Total Recurring Expenses and Man-Months Employment	456,500	1,321	30,653	78	447,780	1,365	161,600	482	2,198,293	7,648	125,700	370	36,566	126	338,400	1,342	217,700	680		4,013,192
DEVELOPMENT EXPENSES																				
Equipment Purchases:																				
Line Construction	3,600				5,000		5,000		10,000				880		18,000		4,000			46,480
Water	10,000		2,000		10,000		6,500		10,000		10,000		2,100		5,600		4,500			60,700
Transportation	4,000				24,000		*15,000		10,000				250		22,000		25,000			100,250
Communications	12,900		10,000		10,000		8,000		100,000		20,000		10,500		21,000		25,000			217,400
Other					5,000												1,200			6,200
Housing Personnel	10,000				20,000		**5,000		500,000		30,000									565,000
Bldgs. & Struct., Other (inc. LO)	80,000		2,000		2,000		6,000		60,000		50,000		4,000		40,000		3,500			247,500
Fire Breaks (Construction)					**4,000		2,000		40,000		30,000		1,680							77,680
Water Developments					10,000		500		10,000				70							20,570
Landing Fields or Strips	10,000		400		10,000		3,000		25,000		80,000									128,400
Other: Fire Caches					7,000		3,000		10,000								800			20,800
Snag Felling											750,000									750,000
Total Development Expenses	130,500		14,400		107,000		54,000		775,000		970,000		19,480		106,600		64,000			2,240,980
GRAND TOTAL RECURRING AND DEVELOPMENT EXPENSE	587,000		45,053		554,780		215,600		2,973,293		1,095,700		56,046		445,000		281,700			6,254,172
F.Y.1954 Seasonal Force Allotments	1,149,570		218,290		295,230		441,840		2,128,430		1,040,700		209,110		625,290		414,240			6,522,700
FC staff officers almost entirely made up of increased occupancy periods for dispatchers at supervisors' hdq. and alternates at ranger hdq. Figure represents difference between base and recent allotments for the same positions. Short-term protection force, same as above for those positions enumerated on form; also figured from the base. Includes recommended increase in jumpers from 150- to 240-man organization as indicated by R-1 Suppression Plan. Auxiliary personnel, same as above, taken from base. Communication tech. not included here but shown under communications under Development Expenses. Training represents unfinanced part of base (guard & crew training) plus conservative increase to cover training of cooperators and a few other special training costs not included in R-1 base. Travel includes only unfinanced portion of base plus small amount of increase for certain positions that can be made more effective by increasing their travel (prev. guards). Supplies & Material, a bed-rock figure which will allow us to replenish certain items for which no provision for replacement has been made. Contractual services, represents unfinanced portion of air detection contract flying. Does not include reconnaissance of going fires nor detection flights following lightning concentrations; those are FFF charges. Misc. exp., largely made up of increased cost of mtce. & upkeep of new Aerial Fire Control Depot. Mtce. costs on present outlying installations will be eliminated or reduced. Without new Depot two loft set-ups would have had to be replaced shortly. Had replacement figure been included, the annual amount would have been much greater.	*Maps and plows. Shows funds necessary to provide a protection force which will prove adequate to effectively protect the national forests of R-2. If SO staff and asst. ranger positions could be financed from regular P&M and eliminate necessity of drawing on seasonal-force funds, we would be adequately financed for the job and no increases would be required.	*200 miles at \$50 **40 miles at \$100 Comparison of fire situation in R-3 with other regions clearly indicates that R-3 has for many years been near the top in number of fires per year and acreage burned. Further investigation of the record shows that it is very near the bottom in funds. Either some of the other regions are over-financed or R-3 is under-financed. Believe latter to be true. Out of necessity have filled in on manpower needs with FF. Many prevention and presuppression activities cannot be financed or considered from FF. Estimates given for manpower would not allow much increase in manpower because they would be needed to pay some of the accounts now being financed with FF.	*We need a replacement of our Noorduyn plane. This will require special financing since the cost might involve from \$75,000 to \$110,000. **Under consideration at this time is the proposed development of Fire Control Center at McCall and Idaho City for the smokejumper organization. This will require special financing and possibly legislative action.	Man-months & dollars indicate rock-bottom increase over present finances to provide reasonably adequate protection to NF resources. Figures based upon having 85% of our over-all planned needs. Development expenses are best "guesstimate." These figures in addition to what R-5 now gets. There are numerous buildings inc. residences in use now which are wholly inadequate and sub-standard. Replacements of 45% of these would probably raise annual needs by another \$500,000 or more. At present time are converting AM radios to FM. To complete conversion in next 5 years will take \$100,000 minimum per year. Mtce. funds for present radio equipment come from project money. Should be in the base same as telephone lines.	*Radio technicians from 110 entirely. Estimates for recurrent expenses carefully considered and we feel they are good. Development estimates much less accurate. Some taken from project work inventory developed recently for the Columbia Basin Study and while they have good backing as to necessity, we hesitate to class need along with needs presented under recurrent expenses. Don't believe should talk about the two in same breath because of realities of present situation in R-6. Believe concentration should be on manning needs for the present with most of developmental needs postponed until economic conditions have changed materially.	(1) R-7 is in urgent need of 17 man-months of staff time at supervisors' level at cost of \$12,645. This is not a legitimate seasonal-force P&M charge but represents the gap between the base allotment and that required for the staff fire job on the national forests. Detection cost shown is the difference between normal P&M needs and that financed from P&M, and which must be financed from FFF. (2) Auxiliary personnel - R-7 needs services of a radio technician 12 months at \$4,500 plus \$1,000 travel, but again this is not a charge against seasonal-force P&M funds but rather to improvement mtce.	R-8 now employs no FC staff officers on forests or ranger districts. Have 3 full-time GS-4 RD prevention-law enforcement aids. Figures based on 1 full-time staff fire officer on each of 5 heaviest fire forests and 1 full-time staffman on 6 of heaviest fire RD until fire load is brought down to a reasonable size. LO now employed on day-by-day basis. Cannot complete with industry for reliable men until can assure near full-time employment thru high fire occurrence periods. Considerable part of LO employment within fire season is by FFF due to insufficient SFFC funds. Figures represent gap needed to employ men for primary towers near full-time during peak season and pay them from P&M. Short-term employment - principal items to finance a fire tractor driver steadily during high-occurrence periods at locations where no other project work available, and to finance on-duty attack crews on week-end fire days and on high class 4 and 5 fire days. Those employments are now financed largely from FFF, but are normal and essential to effective control organization, and believe they should be financed from P&M when on duty but not fighting fire. Yearlong personnel - 70 man-months is time needed to place 16 district GS-4 men full-time (other projects in slack fire periods), provide continuity of effort on fire problems, and hold and develop men of caliber those jobs require. Non-Recurrent Items Line construction - 4 more heavy plow units and 2 tractor-tankers per year. Transport is for above units. Communication - R-8 telephone lines have failed from lack of maintenance funds. Radio more economical and reliable. \$21,000 is for annual acquisition of radio sets and gear, over amounts normally purchased, to keep abreast of fire communication needs. Buildings & structures - cost of replacing failing LO structures to extent we are now losing ground.	*Fire equipment including radios. Have 14 forests in 7 states. Net forest land protected is 13,177,000 acres. (Gross area in NF protection units is 14,792,000 acres.)												

MAJOR TOPIC NO. VII

Ogden Fire Conference
February 1954

Estimate of Number of Man-Months Needed to Assure Adequate Protection During Average Worst Fire Years

	R e g i o n s								
	1	2	3	4	5	6	7	8	9
Lookouts	801	200	1,000	2/261	1,518	1,150	367	1,750	1,200
Firemen	607	-	1,000	2/528	5/ -	1,138	172	360	640
Suppression Crew Mem- bers (inc. smoke- jumpers)	602	550	200	382	5/13,973	864	-	7/400	480
Patrolmen	79	-	100	184	5/ -	434	6	-	-
Dispatchers	348	15	150	105	708	490	158	224	-
Tank Truck Operators	130	-	36	3/ 24	3/ -	92	-	-	-
Miscellaneous				4/190				7/108	
TOTAL	1/2,567	765	2,486	4/1,674	6/16,199	4,168	703	2,842	2,320
Percentage of 1945 employment	85.9	153	348.7	94	195.5	103.8	98.2	172.7	125.2

1/ Man-months less than 1945 because of elimination of some lookouts and replacement with air patrol. Cost of air detection should be interpreted into man-months to have a current figure comparable to 1945. R-1 seasonal-force fund cost of air patrol is \$76,940 for this column, although only \$56,315 is allotted at present.

2/ Many of the lookouts in R-4 are lookout-smokechasers.

3/ R-4 tank truck operators generally are foremen or members of suppression crews and are included under "suppression crews." In R-5, included with "suppression crews."

4/ R-4's 1945 total included additionally:

Fire Control staff officers	53
Truck drivers, packers, etc.	48
Warehousemen, clerks	90
Communication	60

R-4's 1953 total includes:

Fire Control staff officers	40
Truck drivers, packers, etc.	18
Warehousemen, clerks	22
Communication	57

R-4's needed total includes:

Fire Control staff officers	46
Truck drivers, packers, etc.	74
Warehousemen, clerks	34
Communication	36

(over)

- 5/ R-5 position used primarily as a combination "fireman-patrolman."
R-5 has grouped firemen, suppression crews and patrolmen.
- 6/ R-5 1953 total "reduced man-months in spite of nearly 1/4-million-dollar increase in co-op funds and addition of \$208,000 for fire protection from Flood funds earmarked to two major watersheds."
- 7/ R-8 suppression crew members for the most part are tractor-plow operators.

Patrolmen used only in low-visibility emergencies and are paid from FFF.

Dispatchers not employed except on a few high-fire-occurrence districts.
Dispatching done primarily by a lookout-dispatcher or the ranger.

Tank trucks manned on fires by men employed on other work, such as mechanics, and paid FF suppression.

To relate the above figures to those of other regions, it should be noted that while R-8 has fairly distinct fire seasons in the three Appalachian Mountain forests, the other eight forests experience near year-round burning conditions and fire occurrence. An annual average of approximately 600 fires occurs outside of the so-called fire season.

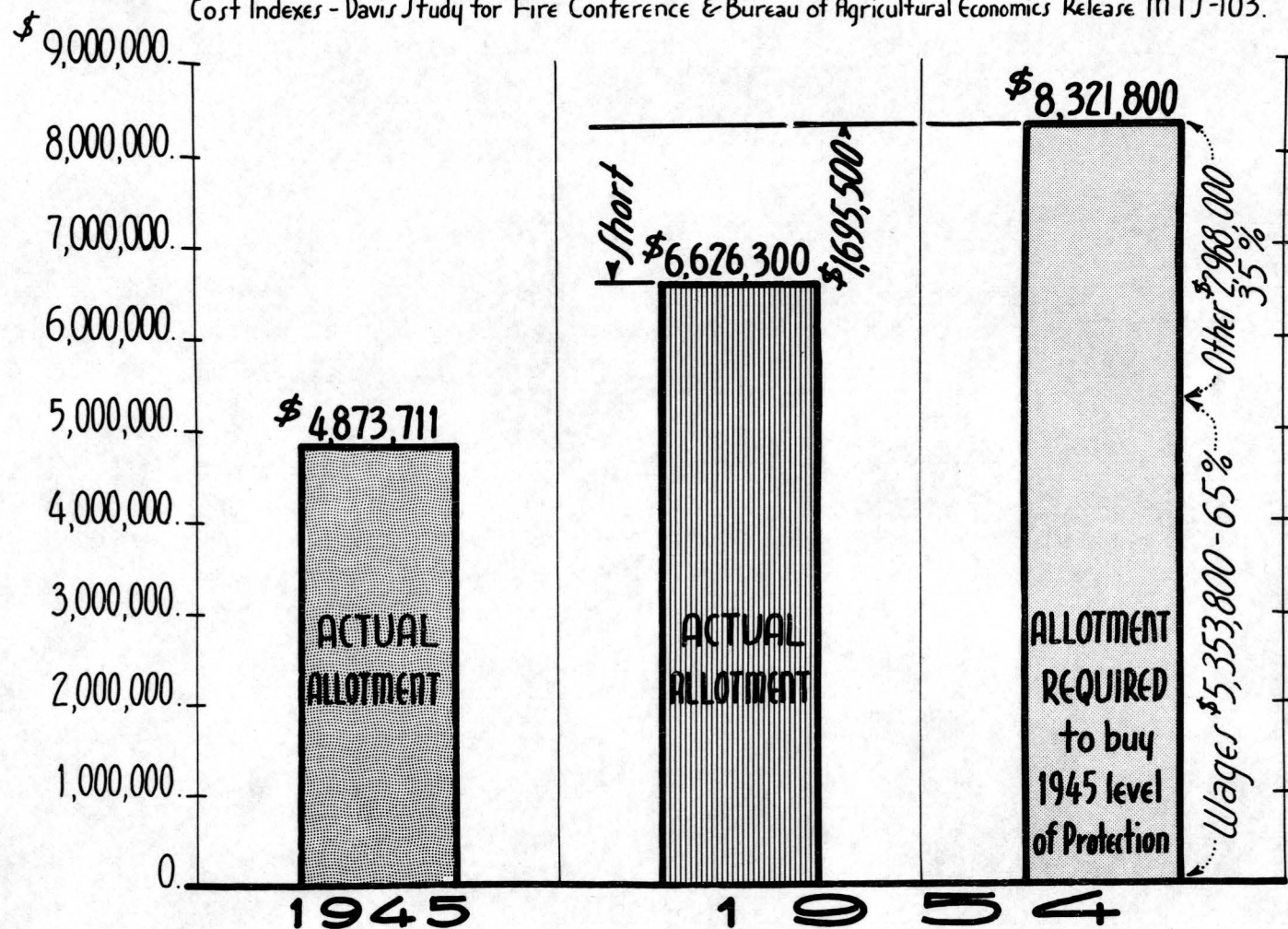
In addition to P&M and cooperative funds and varying with severity of fire years, from \$140,000 to \$200,000 of FFF is used annually to close the gap between cost of minimum presuppression needs and the amount of regular funds available.

R-8 Miscellaneous is 108 law-enforcement men.

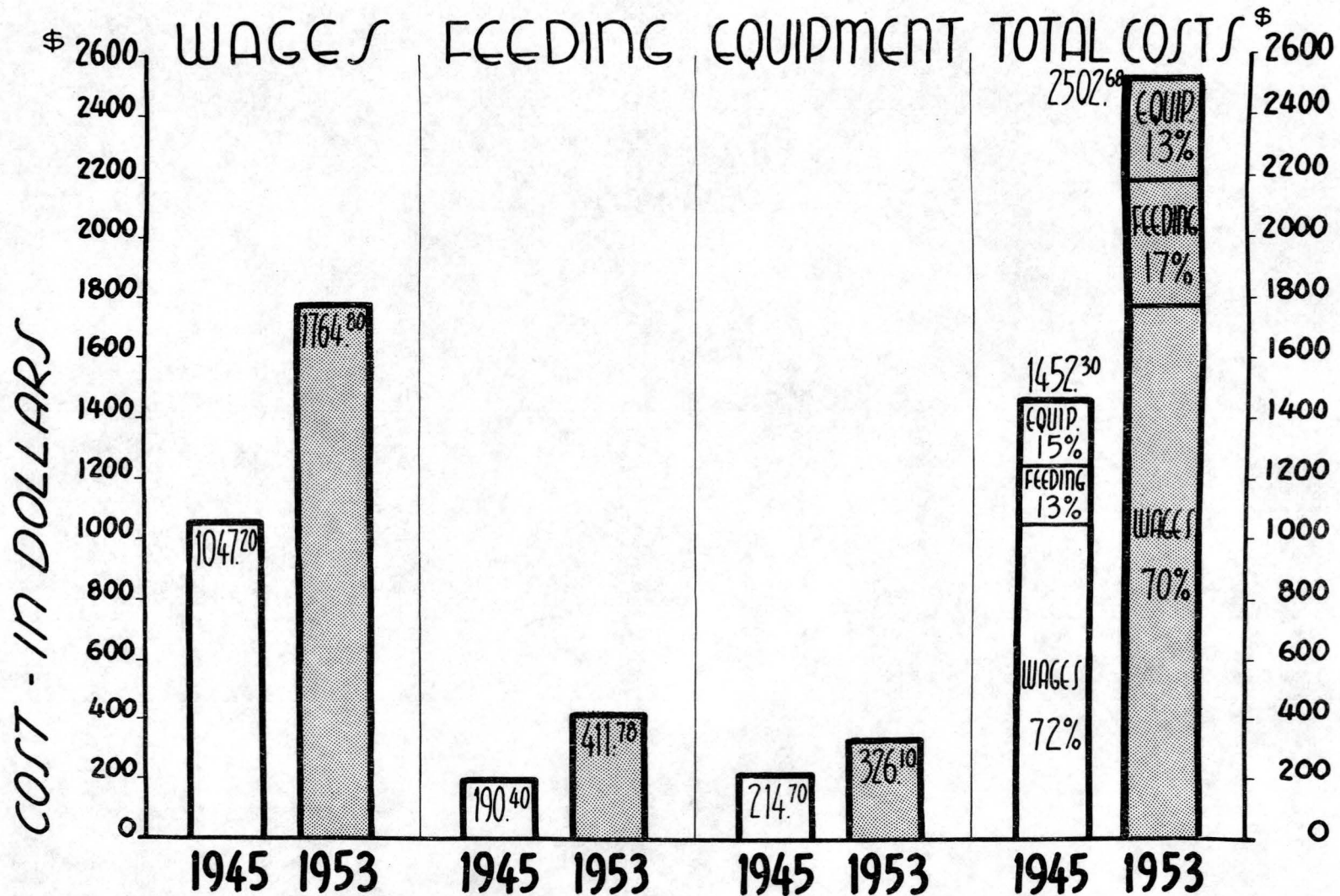
TABLES TO SUPPLEMENT
NARRATIVE MATERIAL

SEASONAL FORCE FIRE FUNDS - REGIONS 1-10 & W.O. CONTINGENT PER SHEETS A & B ALLOTMENT LETTERS COMPARED TO ALLOTMENT REQUIRED TO BUY 1945 LEVEL OF PROTECTION.

Based upon WAGES - 65% of Allotment; OTHER - 35% of Allotment, &
Cost Indexes - Davis Study for Fire Conference & Bureau of Agricultural Economics Release MTS-103.



F. F. F. COST COMPARISON.



FFF COST COMPARISON FOR 1 - 10 HOUR WORK SHIFT. 2 SECTOR FIRE (126 LINE WORKERS) BASIC FIRE ORGANIZATION.

Per Chart 5 of "Principles of Organization for Forest Fire Suppression.

		1945		1953	
		RATE AVERAGE 6 WESTERN REGIONS	COSTS	RATE AVERAGE 6 WESTERN REGIONS	COSTS
WAGES	<i>No. Positions</i>				
Fire Boss	1	\$ 1.42	\$ 14.20	\$ 2.50	\$ 25.00
Service Chief (Div. Boss Level)	1	1.42	14.20	2.41	24.10
Time keeper	1	.88	8.80	1.71	17.10
Tool Maintenance	1	.89	8.90	1.61	16.10
Kitchen	3	1.09	32.70	1.73	51.90
Maps & Records	1	1.20	12.00	2.02	20.20
General Scout	1	1.20	12.00	2.02	20.20
Sector Bosses	2	1.20	24.00	2.02	40.40
Crew Bosses	6	1.06	63.60	1.77	106.20
Straw Bosses	18	.86	154.80	1.42	255.60
Laborers	108	.65	702.00	1.10	1188.00
SUB-TOTAL			1047.20		1764.80
FEEDING	143		190.40		411.78
Feeding (R-1, 30 Man - 1 day).					
EQUIPMENT					
E. O. & R. Rates - 1000 miles - ½ Ton Pickups		.055	55.00	.094	94.00
E. O. & R. Rates - 500 miles - 1½ Ton Trucks		.125	62.50	.17	85.00
E. O. & R. D-8 Tractors, 10 hrs.		5.70	57.00	8.08	80.80
Tool Replacement (Average Cost of 10 Shovels - 10 Pulaski Tools - 10 D.B. Axes)		1.34	40.20	2.21	66.30
SUB-TOTAL			214.70		326.10
TOTAL			\$ 1452.30		\$ 2502.68
			100%		173%

INDEX OF WHOLESALE & RETAIL PRICES, MONTHLY EARNINGS-FACTORY WORKERS, F.S. AVERAGE EMPLOYEES EARNINGS.

REFERENCES - Bureau of Agricultural Economics release, Dec. 1951. MTS-103.

M. H. Davis Summary Major Topic 7, Sub Topic A.

